NORTH CAROLINA Medical Journal

Vol. 10 No. 5
May, 1949

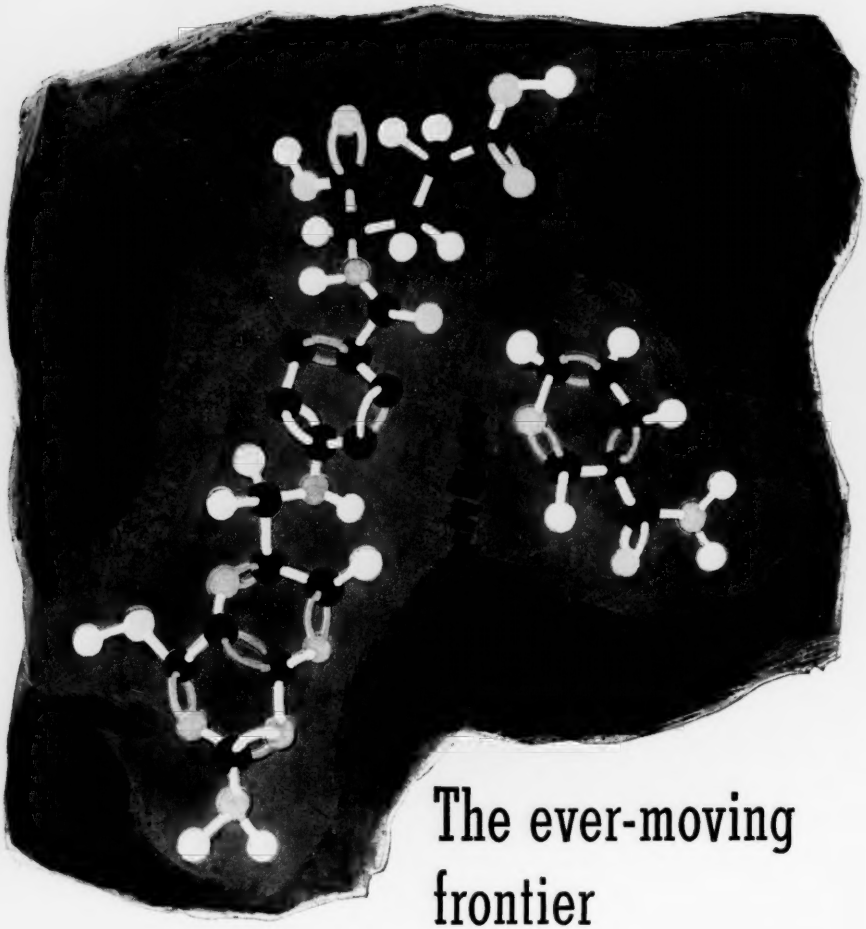
IN THIS ISSUE:

PRESIDENT'S ADDRESS

SELECTED NEURO-OPHTHALMOLOGIC DISORDERS — SMITH

RESEARCH
DEVELOPS THE NEW
Much of the research conducted at the Lilly laboratories is in little-explored fields; it is hoped that this will lead to entirely new pharmaceutical products.
An idea originated on the blackboard, in a notebook, or possibly from a chance observation must be developed by the chemist and his allies before the pharmacologist and research clinician are called upon for their evaluation.
It is through the magnitude of this unhampered research that finer and better products will be made available to the medical profession—tomorrow.
QUALITY
RESEARCH
ETHICS
ELI LILLY AND COMPANY, INDIANAPOLIS 6, INDIANA, U.S.A.
Lilly

Table of Contents, Page II



The ever-moving frontier

Research on vitamin knowledge in the field of nutrition has come a long way since the early published researches of McCollum, Mendel and Funk. The science of nutrition is no longer the stepchild of medicine, nor the poor relation of agriculture. In particular, our understanding of the need for vitamins in human nutrition has enormously increased. Vitamins constitute in the aggregate the *sine qua non* for cellular respiration, reproduction, growth and repair.

For the past 25 years, biochemists have pressed forward a continually moving frontier of scientific discovery in the field of nutrition. In recent years, *Lederle* has been in the vanguard of this movement, its investigators being well known for their achievements with folic acid, pyridoxine, biotin, the pantothenates, liver extract, and allied substances. There will be no slackening in the efforts of this organization to uncover additional aids to better health and better living.

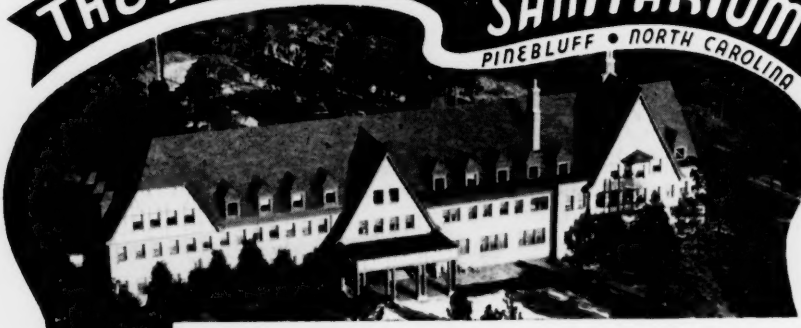
LEDERLE LABORATORIES DIVISION

AMERICAN Cyanamid COMPANY

30 ROCKEFELLER PLAZA • NEW YORK 20, N. Y.

THE PINEBLUFF SANITARIUM

PINEBLUFF • NORTH CAROLINA



A Sanitarium for Rest under Medical Supervision, and Treatment of Nervous and Mental Diseases, Alcoholism and Drug Addiction.

The Pinebluff Sanitarium is situated in the sandhills of North Carolina in a 60-acre park of long leaf pines. It is located on U. S. Route 1, six miles south of Pinehurst and Southern Pines. This section is unexcelled for its healthful climate.

Ample facilities are afforded for recreational and occupational therapy, particularly out-of-doors.

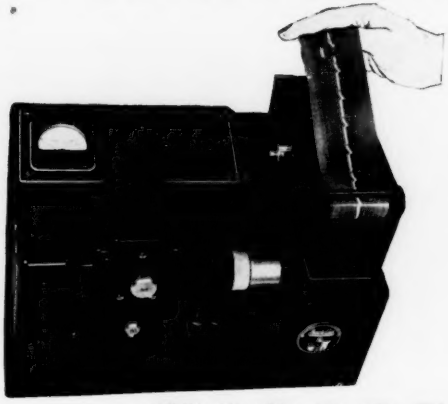
Special stress is laid on psychotherapy. An effort is made to help the patient arrive at an understanding of his life problems; and by adjustment to his personality difficulties or modification of personality traits to effect a cure or improvement in the disease. Two resident physicians and a limited number of patients afford individual treatment in each case.

For further information write:

The Pinebluff Sanitarium, Pinebluff, N. C.

Malcolm D. Kemp, M.D. Medical Director

THE BECK-LEE ELECTROCARDIOGRAPH
WITH THE RECORD AUTOMATIC CAMERA



Permanent, accurate records are developed, fixed and available for interpretation seconds after the heart current is registered by the quartz string galvanometer. The entire dark-room procedure is carried out within the camera.

Here is an instrument that combines the proven accuracy of the quartz string galvanometer with its higher frequency response with the convenience of immediate cardiograms.

MODEL ERA $725
MODEL E $645

WINCHESTER

"CAROLINAS' HOUSE OF SERVICE"

Winchester Surgical Supply Co.
106 East 7th Street Charlotte, N. C.

Winchester-Ritch Surgical Co.
111 North Greene Street Greensboro, N. C.

NORTH CAROLINA MEDICAL JOURNAL

Official Organ of

THE MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA

VOLUME 10
NUMBER 5

MAY, 1949

50 CENTS A COPY
$3.00 A YEAR

CONTENTS

ORIGINAL ARTICLES

President's Address—James F. Robertson, M.D. 229

Selected Neuro-Ophthalmologic Disorders —Henry Carroll Smith, M.D. 230

Cancer of the Large Intestine: Diagnosis and Management—W. B. McCutcheon, M.D. and Raiford D. Baxley, M.D. 243

Psychosomatic History Taking—Angus C. Randolph, M.D. 253

Improved Autotransfusion—Addison G. Brenizer, Jr., M.D. 257

Sickle Cell Anemia Complicated by Valvular Heart Disease—Gus E. Forbes, M.D. . . 261

Three Common Orthopedic Problems: De Quervain's Disease, Pulled Elbow, and Morton's Toe—Alfred T. Hamilton, M.D., F.A.C.S. . 267

Adiposis Dolorosa, with Report of a Case —Walter Spaeth, M.D. 269

Abdominal Pregnancy with Premature Separation of the Placenta and Multiple Complications: A Case Report—Paul E. Simpson, M.D. 273

Thumbnail Sketches of Eminent Physicians: Sir William Osler. III. Osler and Public Health—George E. Rosen, M.D., Ph.D. . . 277

EDITORIALS

The Sesquicentennial Session 280

Editorial Notes on the Sesquicentennial Session 281

Resolution of American Council of Christian Churches 282

Dr. David T. Smith—President-Elect of the National Tuberculosis Association 282

Autotransfusion 282

Cancer to Be Reportable 282

COMMITTEES AND ORGANIZATIONS

Public Relations Committee —Donald B. Koonce, M.D. 283

CORRESPONDENCE

Cancer to Be Reportable 283

Resolution Adopted by Radiological Society . 284

BULLETIN BOARD

News Notes from the Duke University School of Medicine 284

News Notes from the Bowman Gray School of Medicine of Wake Forest College 285

New Hanover County Medical Symposium . 285

Duke North Carolina Medical Postgraduate Course 285

Southern Pediatric Seminar 286

North Carolina Obstetrical and Gynecological Society 286

News Notes from the North Carolina Medical Care Commission 286

State Board of Medical Examiners 286

North Carolina Trudeau Society 286

Western North Carolina Symposium 286

District Societies 286

County Societies 287

The Charlotte Fluorination Demonstration . . 287

Announcements 287

AUXILIARY

288

BOOK REVIEWS

289

CLASSIFIED ADVERTISEMENTS

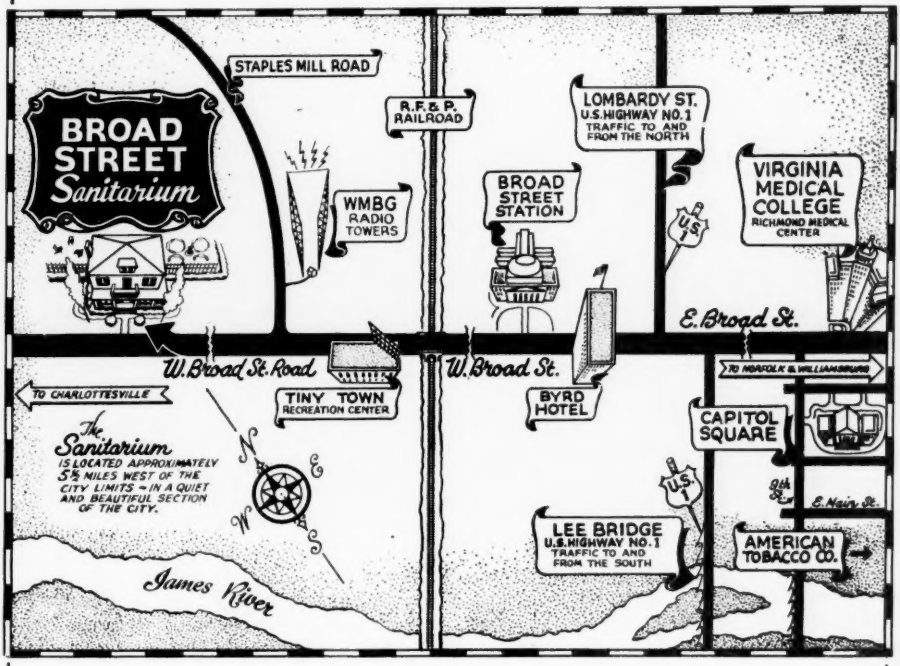
289

INDEX OF ADVERTISERS

XXXV

Entered as second-class matter January 2, 1940, at the Post Office at Winston-Salem, North Carolina, under the Act of August 24, 1912. Copyright 1949 by the Medical Society of the State of North Carolina.

BROAD STREET
Sanitarium
"Exclusively for Alcoholism"



BROAD STREET SANITARIUM

"Specializing in the treatment of alcoholism by the conditioned reflex aversion method"

CHARLES G. YOUNG, M.D.
Medical Director

VIRGIL JOHNSTON
Managing Director

5 miles west of city limits on

Broad St. Road **Tele. 6-1556** Richmond, Va.

in HAY FEVER

Three major qualities distinguish

Your local pharmacy stocks Neo-Antergan in 25-mg. and 50-mg. tablets, supplied in boxes of 100 and bottles of 1,000.

1. EFFICACY Neo-Antergan has provided complete or appreciable symptomatic relief in 71 per cent of an accumulated series of more than 500 cases of hay fever.

2. WIDE THERAPEUTIC RANGE Neo-Antergan has proved effective in relieving allergic symptoms in certain patients who had failed to respond to other therapeutic measures.

3. SAFETY It was necessary to discontinue Neo-Antergan therapy only in approximately 3.5 per cent of a series of over 1,500 patients because of untoward side effects.

MERCK

MERCK & CO., Inc. *Manufacturing Chemists* **RAHWAY, N. J.**

Here's what throat specialists reported about Camel Mildness—

In a recent coast-to-coast test, hundreds of men and women smoked Camels—and only Camels—for 30 consecutive days. They smoked on the average of one to two packs a day. Each week throat specialists examined the throats of these smokers, a total of 2470 careful examinations, and reported

"NOT ONE SINGLE CASE OF THROAT IRRITATION due to smoking CAMELS"

Money-Back Guarantee!

Try Camels and test them as you smoke them. If, at any time, you are not convinced that Camels are the mildest cigarette you've ever smoked, return the package with the unused Camels and we will refund its full purchase price, plus postage. (*Signed*) R. J. Reynolds Tobacco Company, Winston-Salem, North Carolina.

According to a Nationwide survey:

MORE DOCTORS SMOKE CAMELS

than any other cigarette

Doctors smoke for pleasure, too! And when three leading independent research organizations asked 113,597 doctors what cigarette they smoked, the brand named most was Camel!

Luzier's Fine Cosmetics and Perfumes

As Advertised In Publications Of The American Medical Association
Are Distributed In North Carolina By:

MRS. BEE DEVONDE, Divisional Distributor
1231 Armory Drive
Charlotte, N. C.

Distributors

MRS. HAZEL BECKHAM
2021 Bay St.
Charlotte, N. C.

MRS. HARLON WHITMAN
1716 N. Lee St.
Salisbury, N. C.

MRS. LUCILLE BROOKSHIRE
Route No. 2
Lenoir, N. C.

MRS. CORAL ECKARD
Pendleton Apts.
Newton, N. C.

MRS. CLYDE MORRIS
118 Patton St.
Morganton, N. C.

MRS. ANNIE LIPE
Drawer 537
Rutherford College, N. C.

MRS. HELEN MORRISON
164 Bost St.
Statesville, N. C.

MRS. WAVOLYN BARTLES
Union Mills,
N. C.

DOOLEY AND DOOLEY, Divisional Distributors
P. O. Box No. 1744
Phone No. 39-9038 Charlotte, N. C.

Distributors

MRS. EDNA P. McPHERSON
1005 Waters St.
Lumberton, N. C.
Phone No. 445

MRS. LILLIAN PEARSON
Box No. 285
Gastonia, N. C.

MRS. P. O. SKIDMORE
129 Montgomery Ave.
Albemarle, N. C.
Phone No. 218

MRS. MYRTLE COHOON
408 Gold Street
Shelby, N. C.

MISS MAXIE JONES
308 Frederick Apt.
Charlotte, N. C.
Phone No. 46141

MRS. FAYE BROOME
Box No. 78
Marshville, N. C.

MRS. MYRTLE COOPER
Route No. 1, Box No. 41
Charlotte, N. C.
Phone No. 37319

FIELDS AND FIELDS, Divisional Distributors
1214 Brooks Avenue
Phone No. 3-3938 Raleigh, N. C.

Distributors

MRS. PEARL MAY
1112 Oval Dr.
Durham, N. C.

MRS. POLLY EVANS
Perry Apts., No. 4
Elizabeth City, N. C.

POWELL AND POWELL
207 N. Lionel St.
Goldsboro, N. C.

MRS. MAYME HARLESS
108 Gordon Street
Sanford, N. C.

MRS. EMMA PATE
14 Neuse Road
Havelock, N. C.

MRS. KATE WHELESS
Box No. 1151
Rocky Mount, N. C.

MRS. SALLY EVERETT
12 Northern Blvd.
Wilmington, N. C.

MRS. EVELYN BARBER
314 Johnson St.
Clinton, N. C.

MRS. SALLY ADAMS
13 Bagwell Ave.
Raleigh, N. C.

MRS. MAMIE RHEA
Box No. 15
Windsor, N. C.

MRS. NINA WILLIAMS
713 S. Tarboro St.
Wilson, N. C.

MRS. LOUISE FARLEY
309 Washington St.
Kinston, N. C.

KENNEDY AND KENNEDY, Divisional Distributors
2603 High Point Road
Greensboro, N. C.

Distributors

MRS. ROSA NICHOLSON
Route No. 6, Box No. 205A
High Point, N. C.

MRS. ESSIE O'NEAL
Route No. 4, Kivett Dr.
High Point, N. C.

MRS. MARY ETTA ROUTH
Box No. 7
Randleman, N. C.

MISS RACHEL BARNES
10 East 4th Ave.
Lexington, N. C.

MRS. CORA KIMSEY, Divisional Distributor
P. O. Box No. 6066
Asheville, N. C.

Distributors

VIOLA QUINN
21 Wanoca
Biltmore, N. C.

GRACE BRIGMAN
Swannanoa, N. C.

MARIE BALDWIN
Fletcher, N. C.

LULA WHITTAKER
Fletcher, N. C.

LILLIAN MAXWELL
Robbinsville, N. C.

MRS. ALYCE H. LORTZ, Divisional Distributor
P. O. Box C-1
Phone No. 3-2830 Greensboro, N. C.

Distributors

MRS. MABEL KEESEE
Box No. 1176 Greensboro, N. C.
Phone No. 2-6893

safe... rational... effective

in the treatment of **overweight**

Harris, Ivy and Searle conclusively proved that 'Benzedrine' Sulfate safely depresses the overweight patient's appetite—and when caloric intake is sufficiently lowered, weight reduction is facilitated. After a comprehensive series of functional tests, these same investigators conclude: "No evidence of deleterious effects of the drug (amphetamine sulfate) were observed." (J.A.M.A. 134:1468, 1947).

Benzedrine* Sulfate tablets • elixir

(racemic amphetamine sulfate, S.K.F.)

one of the fundamental drugs in medicine

Smith, Kline & French Laboratories, Philadelphia *T.M. Reg. U.S. Pat Off.

ANNOUNCING: First Television, in Natural Color, of Surgical and Medical Procedures while under way. Arranged and presented by Smith, Kline & French Laboratories—AMA Convention, June 6, 7, 8 & 9, at Atlantic City.

Medical Society of the State of North Carolina

OFFICERS

President—Dr. J. F. Robertson, Wilmington

President-Elect—Dr. G. W. Murphy, Asheville

First Vice President—Dr. J. J. Combs, Raleigh

Second Vice President—Dr. J. A. Elliott, Charlotte

Secretary-Treasurer—Dr. Roscoe D. McMillan, Red Springs

Executive Secretary—Mr. James T. Barnes, Raleigh

COUNCILORS

First District—Dr. Zack D. Owens, Elizabeth City

Second District—Dr. John Cotten Tayloe, Washington

Third District—Dr. Donald B. Koonce, Wilmington

Fourth District—Dr. Newsom P. Battle, Rocky Mount

Fifth District—Dr. John N. Robertson, Fayetteville

Sixth District—Dr. Millard D. Hill, Raleigh

Seventh District—Dr. Elias S. Faison, Charlotte

Eighth District—Dr. James H. McNeill, North Wilkesboro

Ninth District—Dr. Irving E. Shafer, Salisbury

Tenth District—Dr. W. A. Sams, Marshall

The above-named officers and councilors constitute the Executive Committee of the Society

CHAIRMEN OF SECTIONS

General Practice of Medicine and Surgery—Dr. Amos N. Johnson, Garland

Ophthalmology and Otolaryngology—Dr. L. R. Hedgpeth, Lumberton

Practice of Medicine—Dr. R. Z. Query, Jr., Charlotte

General Surgery—Dr. George L. Carrington, Burlington

Pediatrics—Dr. J. Robert Adams, Charlotte

Gynecology and Obstetrics—Dr. Frank R. Lock, Winston-Salem

Public Health and Education—Dr. E. H. Ellinwood, Newton

Neurology and Psychiatry—Dr. John S. McKee, Jr., Morganton

Radiology—Dr. Henry B. Ivey, Goldsboro

Pathology—Dr. E. D. Peasley, Asheville

TRIMETON

the difference is noteworthy

Trimeton

(brand of prophenpyridamine)

TRIMETON* differs from most other antihistaminic agents in not being a derivative of ethanolamine or ethylenediamine. This difference is noteworthy and is responsible for the gratifying clinical results obtained. In one study of 227 patients with various allergic conditions[1]

83% obtained benefit from Trimeton

Side effects, common to all antihistaminics, occur with TRIMETON, but only a few patients find that they cannot tolerate the drug.[1]

Relief from allergic symptoms is usually obtained with one TRIMETON 25 mg. tablet three times daily; in some patients half this dosage is sufficient. The action of TRIMETON lasts from four to six hours.[2]

PACKAGING: TRIMETON (1-phenyl-1-(2-pyridyl)-3-dimethylaminopropane) is available in 25 mg. tablets, scored, in bottles of 100 and 1000.

BIBLIOGRAPHY: 1. Brown, E. A.: Ann. Allergy 6:393, 1948. 2. Wittich, F. W.: Ann. Allergy 6:497, 1948.

*TRIMETON trade-mark of Schering Corporation

Schering

SCHERING

CORPORATION · BLOOMFIELD, NEW JERSEY

IN CANADA, SCHERING CORPORATION LIMITED, MONTREAL

MEAT...
and Physical Rehabilitation

Any marked loss of weight in the nonobese patient deprives the organism of a considerable amount of protein, apt to lead to severe protein deficiency. A weight loss of 5 Kg. does not appear large as such. Yet it is estimated that it may well entail a simultaneous loss of as much as 900 Gm.—or two pounds—of tissue protein,* taken from the scant protein stores of the body, from the muscles, liver and other viscera. Prevention of such large protein losses or rapid replacement of depleted protein stores is imperative. Nitrogen balance must be re-established as quickly as possible to promote local healing and general recovery in many surgical conditions, in severe burns, in metabolic disturbances, and following overwhelming infections.

Meat as the primary source of protein affords a number of special advantages in the period of actual dietotherapy as well as during recovery and rehabilitation. It is of excellent digestibility so that it can be easily eaten two or three times a day to satisfy increased protein requirements.

The appetizing taste appeal encourages simultaneous intake of other valuable foods, especially desirable in the presence of anorexia.

All meat is notably rich in biologically complete protein, from 17 to 20 per cent of its uncooked and from 25 to 30 per cent of its cooked weight. Furthermore, meat ranks with the best sources of B-complex vitamins and iron, important nutrient factors in physical rehabilitation.

*Meyer, K. A., and Kozoll, D.D.: Progress in the Treatment of Carcinoma of the Stomach and Esophagus, South Dakota J. Med. & Pharm. 2:39 (Feb.) 1949.

The Seal of Acceptance denotes that the nutritional statements made in this advertisement are acceptable to the Council on Foods and Nutrition of the American Medical Association.

American Meat Institute
Main Office, Chicago...Members Throughout the United States

HAY FEVER *relief* day and night...

The extra long action of Neo-Synephrine hydrochloride makes possible control of hay fever symptoms with infrequent dosage, thus enabling the patient to be comfortable during the day and obtain sleep at night.

Average dose: 2 or 3 drops in each nostril.

No appreciable interference with ciliary action. Virtually no side reactions.

FOR NASAL USE: ¼% solution (plain and aromatic), 1 oz. bottles; 1% solution, 1 oz. bottles; ½% water soluble jelly, ⅝ oz. tubes.

FOR OPHTHALMIC USE: ⅛% low surface tension, aqueous solution, isotonic with tears, 15 cc. bottles.

NEO-SYNEPHRINE®

HYDROCHLORIDE

Brand of phenylephrine hydrochloride

Winthrop-Stearns INC.

NEW YORK 13, N. Y. WINDSOR, ONT.

Neo-Synephrine, trademark reg. U.S. & Canada

THIS SUGGESTION MAY BE OF VALUE FOR YOUR THROAT PATIENTS:

When cigarette smoking is a factor in throat irritation,
many leading nose and throat specialists suggest*
to their patients a choice of 3 alternatives:

1. Stop Smoking,

2. Smoke less,

3. *Change to* Philip Morris!

• Philip Morris is the *only* cigarette proved definitely and measurably less irritating!** Perhaps you too will find it worth while to suggest *"Change to* PHILIP MORRIS."... by far the wisest choice for *everyone* who smokes.

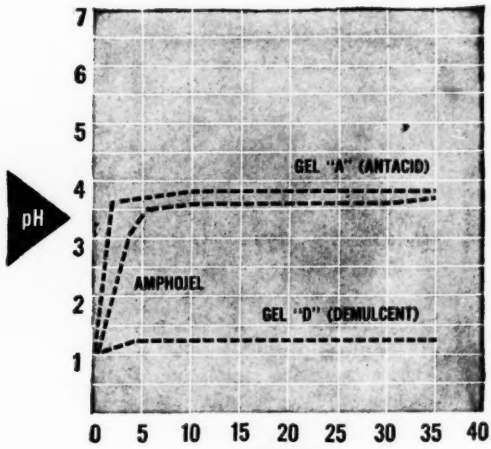
PHILIP MORRIS

Philip Morris & Co., Ltd., Inc.
119 Fifth Avenue, N. Y.

DO YOU SMOKE A PIPE? We suggest an unusually fine blend — COUNTRY DOCTOR PIPE MIXTURE. Made by the same process as used in the manufacture of Philip Morris Cigarettes.

*Completely documented evidence on file.
**May we send you copies of these published studies:

Laryngoscope, Feb. 1935, Vol. XLV, No. 2, 149-154; Laryngoscope, Jan. 1937, Vol. XLVII, No. 1, 58-60; Proc. Soc. Exp. Biol. and Med., 1934, 32-241; N. Y. State Journ. Med., Vol. 35, 6-1-25, No. II, 590-592.



The reaction rate of Amphojel and its component gels.

the double action of AMPHOJEL®

antacid demulcent

Amphojel – Aluminum Hydroxide Gel, Alumina Gel Wyeth – is unique because it is a colloidal mixture of two essentially different types of alumina gel, one having an antacid effect . . . the other a demulcent action.

The "antacid gel" instantly stops gastric corrosion and establishes a mildly acid environment.

The "demulcent gel" provides a prolonged local protective effect, and might be likened to a "mineral mucin."

Thus, through its double action, Amphojel gives you an ideal preparation for use in the management of peptic ulcer.

Wyeth®

ACCEPTED COUNCIL ON PHARMACY AND CHEMISTRY AMERICAN MEDICAL ASSOCIATION

WYETH INCORPORATED, PHILADELPHIA 3, PA.

Announcement

NATIONAL POSTURE WEEK

will be observed this year

OCTOBER 17—22

We make this announcement so early in the year because many hundreds of physicians, surgeons, industrial physicians, health officers and other members of the profession have over the last ten years scheduled the event for May.

The change to October has been made in deference to requests from schools, colleges, adult education groups and community welfare organizations like the "Y's." They now look forward to wider and more effective participation because they can key the event into their health education and physical fitness programs early in the school term, thus avoiding vacation season interruptions.

As National Posture Week enters upon its second decade, it is our privilege to thank the many, many physicians who have given it their approval as a worthy contribution to public health education. We pledge ourselves to carry on in the future as we have in the last ten years with National Posture Week and the daily work of The Samuel Higby Camp Institute for Better Posture. We shall do this to the limit of our resources in accordance with the ethical precepts of the profession.

S. H. CAMP and COMPANY • JACKSON, MICHIGAN
World's Largest Manufacturers of Scientific Supports
Offices in New York • Chicago • Windsor, Ontario • London, England

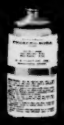
Note: *Physicians may at any time ask for good posture booklets for distribution to their patients and for posters suitable for office and instruction display. All are authentic. Details and descriptions on request to—*

THE SAMUEL HIGBY CAMP INSTITUTE FOR BETTER POSTURE
Empire State Building, New York 1, N. Y. (Founded by S. H. Camp & Company, Jackson, Mich.)

Judicious Laxation

through ease of administration

Of the many features which have won for Phospho-Soda (Fleet)* an impressive record of clinical acceptance, outstanding is its ease of administration. This, together with its controlled action, and its freedom from undesirable side effects, gives assurance that every prescription of Phospho-Soda (Fleet) will result in thoroughly effective — yet gentle — catharsis.



C. B. FLEET CO., INC. • LYNCHBURG, VIRGINIA

* PHOSPHO-SODA and FLEET are registered trade-marks of C. B. Fleet Co., Inc.

PHOSPHO-SODA
(FLEET)

CHECK LIST for choice of a laxative

Phospho-Soda (FLEET)	TYPE OF ACTION
✓	Prompt action
✓	Thorough action
✓	Gentle action
✓	Free from Mucosal Irritation

Phospho-Soda (FLEET)	SIDE EFFECTS
✓	Absence of Constipation Rebound
✓	No Development of Tolerance
✓	Safe from Excessive Dehydration
✓	Nonhabituating

Phospho-Soda (FLEET)	SIDE EFFECTS
✓	No Disturbance of Absorption of Nutritive Elements
✓	Causes no Pelvic Congestion
✓	No Patient Discomfort
✓	Free from Cumulative Effects

Phospho-Soda (FLEET)	ADMINISTRATION
✓	Flexible Dosage
✓	Uniform Potency
✓	Pleasant Taste

Phospho-Soda (Fleet) is a solution containing in each 100 cc. sodium biphosphate 48 Gm. and sodium phosphate 18 Gm.

ACCEPTED FOR ADVERTISING BY THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

MORE AND MORE...

DOCTORS ACCLAIM

Koromex Jelly and Koromex Cream are two companion preparations for pregnancy control, assuring the patient of alternates for individual personal preference. Time-tested Koromex Jelly and Koromex Cream... have the same active ingredients and same pH (4.5) consistent with vaginal fluids... afford necessary dependable barrier film... instantly spermicidal on contact ...will not interfere with normal vaginal biology.

After consideration of these features which make Koromex Jelly and Koromex Cream outstanding contraceptives, the approval given to these sterling products is indicative as to why more and more physicians are resorting to Koromex.

ACTIVE INGREDIENTS: BORIC ACID 2.0%, OXYQUINOLIN BENZOATE 0.02% AND PHENYLMERCURIC ACETATE 0.02%, IN SUITABLE JELLY OR CREAM BASES.

FOR MORE COMPREHENSIVE DATA PLEASE SEND FOR AVAILABLE PROFESSIONAL LITERATURE.

KOROMEX

TRADE MARK REGISTERED

"CHOICE OF PHYSICIANS"

HOLLAND-RANTOS COMPANY, INC., 145 HUDSON STREET, NEW YORK 13, N. Y.

MERLE L. YOUNGS • PRESIDENT

when Milk becomes a dietary dilemma

Problem: When casein or other animal protein sensitivity renders all natural or processed milks* contraindicated in the pediatric dietary, because of eczematous, gastro-intestinal or other reactions, how can allergy be avoided and proper infant nutrition still be maintained?

Solution: Replace milk with Mull-Soy, the liquid hypoallergenic soy food—completely free of offending animal proteins. Mull-Soy is a biologically complete vegetable source of all essential amino acids, and closely approximates whole cow's milk in fat, protein, carbohydrate, and mineral content when diluted 1:1 with water. It is quickly prepared, palatable, easily digested and well-tolerated—equally desirable for infants, children or adults.

**Goat's milk and processed cows' milk have unmodified casein factors.*

BORDEN'S PRESCRIPTION PRODUCTS DIVISION
350 MADISON AVENUE, NEW YORK 17, N. Y.
In Canada write The Borden Company, Limited, Spadina Crescent, Toronto

Mull-soy

When Milk becomes "Forbidden Food"

Mull-Soy is a liquid hypoallergenic food prepared from water, soy flour, soy oil, dextrose, sucrose, calcium phosphate, calcium carbonate, salt, and soy lecithin; homogenized and sterilized. Available in 15½ fl. oz. cans at all drugstores.

A Modern Hospital for the Treatment of Alcoholism Exclusively

A private hospital offering scientific, institutional, medical, psychological, reflex, reduction and other methods for the rehabilitation of consent patients suffering from alcoholism.

All equipment modern with facilities to take care of 50 patients both male and female.

Under the direction of a competent licensed M. D. with five consultant physicians subject to call. Registered Nurses in charge 24 hours daily.

Approved and licensed by the Virginia State Hospital Board. Atop beautiful Mt. Regis, five miles West of Roanoke, on Highway 11, in the quiet serene mountains of Virginia, conducive to rest, comfort and recuperation. Doctors inspection invited. For information phone or write.

WHITE CROSS HOSPITAL

Five Miles West of Roanoke on Route No. 11.
Salem, Virginia — Phone Salem 287

Copyright 1948. H. N. Alford, Atlanta, Ga.

Gentle Sedation, Safe Hypnosis

To the obstetrician, 'Amytal Sodium' (Amobarbital Sodium, Lilly) means dependable amnesia. To the surgeon, it means safe basal anesthesia. To medical practitioners generally, 'Amytal Sodium' is a versatile barbiturate for securing all degrees of relaxation, from mild sedation to deep hypnosis. The moderately long duration of action characteristic of 'Amytal Sodium' tends to insure uninterrupted sleep.

Whenever a reliable barbiturate is indicated, prescribe 'Amytal Sodium.' 'Amytal Sodium' is supplied in a large variety of dosage forms and is available on prescription at drug stores everywhere.

Lilly

ELI LILLY AND COMPANY, INDIANAPOLIS 6, INDIANA, U.S.A.

A 15" x 12" reproduction of this illustration by George Rapp is available upon request

BEGINNING A GREAT EXPERIENCE

Thanks to prenatal care, better nutrition, and the knowledge and skill of the physicians engaged in obstetrical practice, maternal mortality and morbidity continue to decline.

Products of medical research have helped to solve some of the obstetrician's problems. For prenatal care, the vitamins, calcium, well-tolerated iron salts, and preparations of liver extract have been found useful. Administration of the shorter-acting barbiturates during labor has made the experience less trying for the mother, with little danger of damaging effect upon the infant. Postpartum care has been simplified with ergonovine maleate. These are but a few of the contributions of research scientists to maternal and infant welfare. At the Lilly Research Laboratories, work goes on apace to improve existing products and to seek answers to the problems yet unsolved. That improvements will come seems a certainty; and when they do, you, the physician, will be the first to be informed.

Lilly

LILLY SPECIALISTS SERVE THE MEDICAL PROFESSION

NORTH CAROLINA MEDICAL JOURNAL

OWNED AND PUBLISHED BY

THE MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA

VOLUME 10 MAY, 1949 NUMBER 5

PRESIDENT'S ADDRESS

JAMES F. ROBERTSON, M.D.

WILMINGTON

This is indeed a happy occasion for me, and I am proud to have had a hand in dealing with the many problems which have come before this organization in the past year. Some of them have been met and dealt with very successfully, and I feel that we can truthfully say that some worthwhile objectives have been achieved. Each year the work of this Society becomes more voluminous and more time consuming, and I am very glad that we now have a full time executive secretary, who can take a great many of the duties from the shoulders of the other officers. If we are fortunate enough to get a full time public relations director, the president's job in the future will be much less arduous and time consuming. I am glad, however, that during this period of transition you will have a most able president for the next year, and one who will be able to give more time to the manifold chores he is called on to perform.

As in every business, there have been numerous occasions when the work has been most enjoyable, but at times situations have arisen which were far from pleasant. But I have yet to call on anyone to give his time to the Medical Society who has not willingly and generously done so. I have made many very pleasant contacts and some fast friends during this term of office, and I have been impressed by the fact that one must know and work with people in order to form a true picture of them. At times the opinions we form of our colleagues on superficial acquaintance are not complimentary, but after knowing and working with them we usually find these to be erroneous impressions. I believe that everyone has much good in him, although it is manifested in different ways.

Delivered at the Sesquicentennial Banquet, Medical Society of the State of North Carolina, Pinehurst, May 10, 1949.

Recommendations

A permanent home for the Society

In my address to the House of Delegates I made three recommendations which I would like to emphasize here this evening. One is the project for a permanent home for the State Medical Society. With the advice and consent of the Medical Society, I appointed several months ago a committee to look into the feasibility of purchasing a site for a home in Raleigh. They were asked to study the question and report to us at this meeting. Our State Medical Society should definitely own a permanent home. It should contain record rooms, offices, a rather large meeting room, a bedroom suite where the officers of the Society could stay when they are in Raleigh on business, and other offices which we could rent to such auxiliary organizations as the North Carolina Divisions of the Cancer Society and the Polio Foundation, the North Carolina Dental Society, the Woman's Auxiliary, the State Board of Medical Examiners, and the Red Cross.

There are ample funds in the treasury now to initiate this project. I would not, however, advise haste in undertaking it. I think a committee should be prepared at any time to investigate and, with the advice and consent of the Executive Committee, purchase a suitable piece of real estate if the price and site seem right. Then there should be set aside from the receipts of the Society each year a definite sum which would be earmarked for the permanent home and would be used for nothing else.

A state home for the aged

The second project which I have in mind, and which I believe would appeal to a great many of our fellow citizens, is a home for the aged built by the state. It should be a

place where they could be housed and fed and have minimal medical care at a figure which the average person could afford to pay.

When old people become dependent on their children for support and are forced to live with a young married couple, this arrangement does not often produce the best results. In fact, it is sometimes the cause of unhappiness in the home, and even of divorce. The young people don't like it and the old folks don't like it. Old people like to be independent and to be where they can have company which is congenial, and yet they do not want to be in the "poor house." I hope that we can interest some of our legislators in a project of this sort, so that such a home may be built, and supported in part by funds from the state.

A public relations director

The third and last project which I wish to bring to your attention again tonight is that of employing a full time public relations director. Most of us have ideas about what should be done in the realm of public relations, but there is a great need for a trained man to coordinate our ideas and to advise with us and lead us. Many times during the past year and a half I have had to make decisions which have involved public relations, when expert advice was badly needed. Usually I consulted with what friends and colleagues were near by, and I believe that the advice I received has been sound. However, a well trained public relations man could save us much embarrassment and some bad advertising.

My idea of good public relations is not so much good radio and newspaper publicity as it is guidance and education of us doctors, along with all of our employees who come in contact with the public in our offices, hospitals, and over the phones in our everyday work. I believe that a good public relations director could increase the percentage of membership in our State Society, and could see and point out our weaknesses and shortcomings in a way no doctor could do.

As I see it, the things which have brought our public relations to a new low in the past two years are such practices as rebates, overcharging, failure to provide for emergency and night calls, unnecessary operations, and unnecessary gadgets to run up the bill to a point where it is beyond the reach of the average person to pay. Many of these things can be corrected and are being corrected, but a good public relations director could help us tremendously with these and other problems. Dr. Koonce and his committee have done a fine job, but they have been handicapped by lack of funds, lack of time, and lack of special training.

SELECTED NEURO-OPHTHALMOLOGIC DISORDERS

HENRY CARROLL SMITH, M.D.

NASHVILLE, TENNESSEE

The purpose of this paper is to present a few interesting neuro-ophthalmologic conditions, with examples which occurred in my practice. Although the titles of some of these conditions would seem commonplace, I believe that the cases selected cannot be so described. Many of the patients were seen during the three years that I spent at an Army General Hospital which was designated for the care of neurologic disorders. The remainder were seen in the clinics and wards of a teaching hospital, or in private practice.

The conditions to be discussed are grouped under five classifications: (1) migraine, (2) Horner's syndrome, (3) demyelinating diseases, (4) miscellaneous defects in the field of vision, and (5) nystagmus.

Migraine

Ophthalmic migraine is typified by ocular symptoms—principally the appearance of zig-zag flashes of light homonymously placed in the fields of vision, and called "fortification spectra." These may give way to homonymous loss of a portion of the field of vision, or proceed to extreme constriction of the peripheral fields bilaterally. With the subsidence of ocular symptoms, headache and nausea, perhaps with vomiting, occur. Following recurrent attacks, defects in the field of vision may become permanent. Walsh[1] records one such case, and mentions another which was observed by Dandy. Ormond described the persistence of relative hemianopsia in 2 cases.

The headache may be mild, but is often severe. It has been described as being characteristically unilateral; however, it is sometimes bilateral. The duration varies from a

Read before the Section on Ophthalmology and Otolaryngology, Medical Society of the State of North Carolina, Pinehurst, May 5, 1948.

1. Walsh, F. B.: Clinical Neuro-Ophthalmology, Baltimore, Williams and Wilkins, 1946, p. 1313.

JAMES F. ROBERTSON, M.D.

few minutes to days. Adie, the London neurologist, whose descriptions of migraine are classical, was himself subject to attacks so severe that he was unable to go to his office sometimes for as long as a week.

The etiology of migraine is based upon two factors—a certain individual predisposition, and an exciting cause. The predisposition is apparently due to an imbalance of the vegetative nervous system, which is constitutional. The types of individuals most apt to develop migraine are the hypomanic, euphoric person, such as the dynamic executive, and the helpless, inadequate one, who covets attention and support. Many attacks of migraine in the latter are simple "escape" or "convenience" headaches. Exciting causes are disappointment, fear, anxiety, chagrin, fatigue from any cause, allergy, vestibular irritation (such as might be incited by riding in a vehicle), and exposure of the eyes to bright light[2].

The visual disturbances and other manifestations of migraine are believed to result from a cerebral vascular disorder—either spasm or dilatation[3].

Treatment of migraine revolves around the abolition of the exciting factors. Psychotherapy might be employed for the victims of migraine-for-convenience. The usual treatment of allergy by elimination of excitants, and the administration of certain drugs, particularly ergotamine tartrate, have proved beneficial. More recently, histamine desensitization has been employed.

Surgical procedures designed to alter vasomoter control have been recommended, and indeed employed in extreme cases. Dandy[4] reported success from cervicothoracic ganglionectomy; and Adson[5] of the Mayo Clinic performed periarterial sympathectomy of the common carotid, resection of the internal carotid, and removal of the superior cervical sympathetic ganglion together with a portion of the upper sympathetic trunk in one case. Love and Adson reported improvement from cervicosympathectomy in 5 cases of migraine. Decompression of the brain has been suggested[6].

Permanent field defects produced by migraine

I have had 2 patients with permanent field defects produced by migraine. This feature is a rare manifestation of migraine, and, unless carefully considered, may lead to an erroneus diagnosis[7].

Case 1

This woman had experienced the visual disturbance of ophthalmic migraine for several years. In 1938, at the age of 32, she developed an attack which left an upper segmental defect in the left field of vision (fig. 1). Three weeks later, without visual disturbance or headache, a homonymously placed defect appeared in the right field. When I first saw the patient, she had received a diagnosis of advanced intracranial disturbance, and was quite distressed because she believed that she had a brain tumor. I have been able to observe this patient for ten years. No further change in the fields of vision has occurred, although she is still subject to attacks of headache.

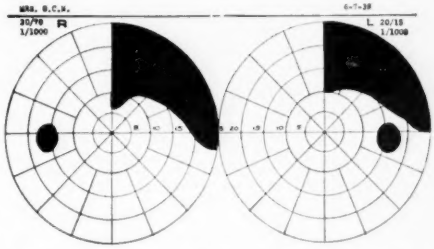


Fig. 1 (Case 1). Permanent field defects of migraine.

Case 2

This man had been subject to attacks of hemianopic color aberrations, followed by absolute loss of homonymous halves of the visual fields, for fifteen years. When he was 27 years old, the homonymous field loss became permanent. I was able to follow this patient for two years, during which time there was no change in the field defect (fig. 2).

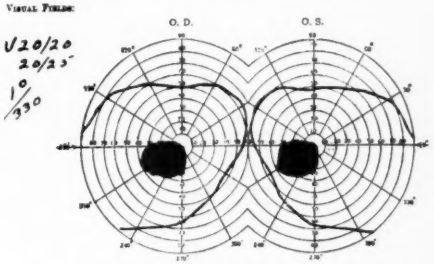


Fig. 2 (Case 2). Permanent field defects of migraine.

Ophthalmoplegic migraine

Ophthalmoplegic migraine occurs after migraine has been present for many years, and makes its appearance after an attack of

2. Nielsen, J. M.: A Textbook of Clinical Neurology, New York, Paul B. Hoeber, 1941, pp. 502-523.
3. Rea, R. L.: Neuro-Ophthalmology, ed. 2, St. Louis, C. V. Mosby, 1941, p. 331.
4. Rea, R.L.(3), p. 405.
5. Rea, R. L.(3), p. 332.
6. Rea, R. L.(3), p. 333.
7. Rea, R. L.(3), p. 329-330.

unusual severity. It is characterized by nausea and intense pain in the head or in the eye itself, which usually persists several days and is followed by paralysis of one or more of the extra-ocular muscles, or of the intrinsic ocular muscles. In the early attacks, the paralysis is temporary. After several recurrences, it may become permanent. The association of headache or ocular pain with paralyses indicates organic disturbance of the fifth nerve and those cranial nerves which supply the muscles of the eye. The third nerve is most usually affected; however, the fourth and sixth may be involved. Interestingly, the same nerves may not be affected in each attack.

Subarachnoid hemorrhage, leaking aneurysm, tumors such as neurofibromas, toxins, and angioneurotic processes have all been named as causes. It seems certain only that the trouble originates in or near the origin of the sensory and motor nerves involved. Ophthalmoplegic migraine may simulate progressive nuclear ophthalmoplegia and myasthenia gravis.

I have two cases to describe:

Case 3

Since the age of 6, a 24 year old woman had suffered recurring attacks of diplopia. Four times in her life she had experienced an episode of severe unilateral headache, accompanied by diplopia, nausea and vomiting, and numbness on one side of the face and in one shoulder and upper extremity. Homonymous hemianopsia, on the side of the unilateral headache and numbness, was always present. The hemicrania, hemianesthesia, and hemianopsia had occurred twice on the right side and twice on the left. Each time the changes had disappeared completely within three days after the onset. At the time of my examination, she presented only partial paralysis of the left external rectus muscle—a residual of the most recent attack.

Complete neurologic examination was negative; however, electro-encephalographic studies persistently showed a "seizure" type of disorder described by the consultant as similar to that seen in epilepsy. Without localization, there was a definite recurrence of fast and slow waves of electrical cortical activity.

This finding was particularly interesting because of the relation between migraine and epilepsy which has often been described in the literature. Indeed, there are reasons to believe that there is a close etiologic relation between the two conditions. Possibly electroencephalograms performed upon all patients with migraine would prove enlightening. The case was also interesting because of the absence of any third nerve involvement, and the alternate appearance of symptoms on the right and left side.

Case 4

A young lieutenant was stricken with sudden severe pain in the right eye and deep orbit while returning to his post of duty after a thirty day leave at his home. I felt that the circumstance of returning to duty was possibly the explanation for his complaint, and, having satisfied myself that there was nothing wrong with his eye, I instructed the lieutenant to proceed to his station.

Three weeks later he returned with the history that, three days after I examined him, drooping of the right upper eyelid and diplopia had developed. The records from his station hospital showed that paralysis of the third, fourth, and sixth nerves had occurred. Four weeks after the onset of headaches, the symptoms and signs had completely disappeared. As is characteristic of ophthalmoplegic migraine, the headache had ceased with the appearance of the paralysis.

Horner's Syndrome

The symptom group which we know as Horner's syndrome was described in 1869 by the man for whom it is named. Because it was believed to be due to paralysis of the cervical sympathetic trunk, it became known as sympathetic ophthalmoplegia. Now it is known that certain points of connection exist between the sympathetic system and the brain itself, and it is perhaps no longer correct to think of Horner's syndrome as arising exclusively from lesions of the cervical sympathetic trunk.

The sympathetic fibers pass down the brain stem, leave the spinal cord, follow the carotid vessels up the neck, re-enter the skull, and pass to the eye either through the long ciliary nerves or by way of the ciliary ganglion and the short ciliary nerves; other branches supply the extra-ocular structures (muscles and lacrimal gland). Such a circuitous course predisposes the nerve to the development of lesions at many points, and makes it difficult to discover the site of a lesion. Among the causes of cervical sympathetic derangement are tumors or syringomyelia of the cervical cord; enlarged glands pressing upon the cervical sympathetic trunk; an enlarged thyroid; neuroma of the sympathetic cord; aneurysm; cervical rib; tuberculosis of the apex of the lung; and injuries, surgical or accidental[8]. Injection of novocain into the cervical sympathetic trunk, by paralyzing the sympathetic fibers, will cause the symptom group to appear immediately. Hereditary Horner's syndrome is often found in routine examination of the eyes.

Interruption of the sympathetic fibers in any part of their course will produce the following definite manifestations:

1. *Paralytic miosis.* The dilator stimulus being abolished, along with any inhibiting action upon the constrictor stimulus, the pupil

8. Rea, R. L.(3), p. 399.

becomes noticeably small. It continues to respond to direct and consensual light stimulus, and will become dilated upon the instillation of any mydriatic solution, such as atropine, which acts by paralysis of the constrictor nerve endings. It will not become dilated when a sympathetic stimulant, such as cocaine solution, is instilled.

2. *Ptosis.* The levator palpebrae superioris contains smooth muscle, which is sympathetically innervated. Paralysis of this innervation produces partial drooping of the eyelid.

3. *Enophthalmos.* In lower forms of animals, the orbit is not separated from the temporal fossa by a bony wall, but by a muscle barrier. We find in man the vestigial remains of this formation in what we know as Müller's muscle, a faint structure which bridges the inferior orbital fissure. It is supplied by the sympathetic nerves, and its relaxation when the paralysis occurs allows a slight enlargement of the orbital cavity, inviting the contents to expand posteriorly. Thus the eyeball recedes.

These three changes—miosis, ptosis, and enophthalmos—are all the results of impaired muscle activity. Because they frequently occur without other changes, it is believed that the sympathetic fibers supplying ocular muscles reach their destination by a path separate from that of the fibers which pass to the blood vessels, sweat glands, and lacrimal gland.

In addition to ptosis, miosis, and enophthalmos, cervical sympathetic paralysis may cause vasomotor disturbance. This is usually characterized by flushing of the ipsilateral side of the face immediately after the paralysis occurs, followed later by pallor of this area. The surface temperature on the affected side may be lowered. Anhidrosis may be present. Although this symptom is one of the three most frequently described (ptosis, miosis, anhidrosis), it is not so uniformly present as might be supposed. Increased flow of saliva on one side may occur, the sympathetic nerve being known to exercise an inhibitory effect upon the salivary glands[9].

While little is known about the central connections between the cervical sympathetic system and the brain, their existence is predicated upon clinical, pathologic and experimental evidence. Their sites and functions have remained, to a large extent, a matter of conjecture. The connections are cerebral, hypothalamic, medullary, and spinal[10].

Incidental to observations during research upon other subjects, it was repeatedly noted that stimulation of certain areas of cerebral cortex (Area 8, Brodmann) produced symptoms identical with those caused by stimulation of the cervical sympathetic system, and opposite to those caused by its paralysis—namely, dilatation of the pupil, widening of the palpebral aperture, and proptosis. These areas were principally in the cortex of the frontal lobe. The maximum effects of their stimulation were obtained only as long as the cervical sympathetic system remained intact; and it was, therefore, concluded that these cerebral areas exercise some control over the action of the sympathetic nerves. Furthermore, stimulation of other frontal cortical areas (Area 19, Brodmann) produced constriction of the pupil, indicating the presence of parasympathetic control in this cerebral locality.

Eventually, through experiment, the prefrontal cortical region was divided into more or less definite tracts according to the motor processes which each may control[11]. We now know that levator and pupillary motor functions, as well as conjugate movements of the eyes, are in part controlled by a small portion of the prefrontal cortex.

The following cases of Horner's syndrome vary both in manifestations and in etiology.

Frontal cortical dysfunction

In the first two cases the appearance of Horner's syndrome seemed to be due to frontal cortical dysfunction.

Case 5

A 26 year old man related that he had received an injury to the right frontal bone at birth. Slight ptosis, enophthalmia, and constriction of the pupil were present on the right side. A roentgenogram of the skull showed circumscribed focal thinning of the lateral portion of the right frontal bone immediately anterior to the coronal suture, and it was the opinion of the roentgenologist that this was evidence of bone injury probably sustained many years ago. There was no evidence of bone infection or inflammation, present or past.

After repeated electro-encephalographic studies, it was reported that each tracing had showed abnormal cortical activity, the focus of the disturbance being in the right frontal region. Such an activity would indicate irritation, or at least dysfunction, of the frontal cortex; and it was felt that this could be explained by the cerebral trauma sustained at

9. (a) Brock, S.: The Basis of Clinical Neurology, Baltimore, William Wood, 1937, pp. 67-69. (b) Bing, R.: Textbook of Nervous Diseases, translated by Webb Haymaker, St. Louis, C. V. Mosby, 1939, pp. 91-92.

10. Walsh, F. B.(1), p. 153.

11. Ranson, S. W. and Clark, S. L.: The Anatomy of the Nervous System; Its Development and Function, ed. 8, Philadelphia, W. B. Saunders, 1947, pp. 298-314.

Fig. 3 (Case 7). Right ptosis, miosis, and enophthalmos.

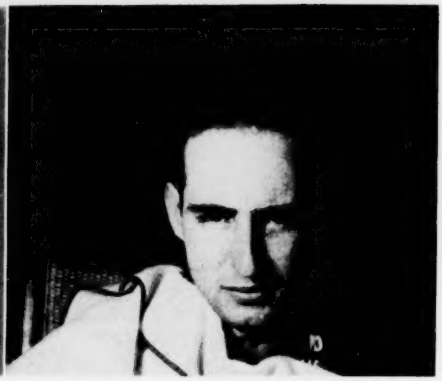


Fig. 4 (Case 7). Patient after hot bath, showing profuse sweating and flushing of the left side of the face, while the right side remains pale and dry.

birth.

Investigation of other possible causes for the ocular symptoms of sympathetic paralysis, including roentgenograms of the chest and of the dorsal and cervical regions, was completely negative. A ventriculogram was not made, although this might have added something to our knowledge of the case.

Case 6

A second and more conclusive case of Horner's syndrome due to dysfunction of the cerebral cortex occurred in a 22 year old man who was seen shortly after having sustained an injury to the right frontal portion of the skull. Except for the ophthalmoplegic changes, there were no objective findings.

Since the patient had evidently suffered severe cerebral insult, a pneumoencephalographic study was felt to be justified. The pictures showed a moderate degree of frontal cortical atrophy.

Complete cervical sympathetic paralysis

The next case presents practically all of the changes which sympathetic paralyses can produce:

Case 7

The patient was a 24 year old man (fig. 3) who, during a routine eye examination, volunteered the information that drooping of the right eyelid, contracture of the right pupil, and pallor and absence of sweating on the right side of the face had been present since his birth. His maternal grandfather had had identical symptoms.

The right palpebral fissure was approximately 3 mm. narrower than the left. There was noticeable retraction of the right eyeball, and the right pupil was 2 mm. smaller than the left. Both pupils were normally active to all stimuli. Instillation of cocaine solution into the right eye did not produce dilatation; homatropine solution caused wide dilatation.

The right side of the face was quite pale as compared with the normal pinkness of the left side (fig. 4). Pinching the skin of the neck on the right side produced delayed flushing; on the left side, this caused immediate flushing (ciliospinal reflex). The skin on the right side of the face did not seem drier than that on the left. Surface temperatures, taken from the temple to the mandible on each side, were equal.

A complete neurologic examination revealed no evidence of other nerve disorders, and intensive search for the cause of this familial complete cervical sympathetic paralysis was negative. This included roentgenograms of the upper dorsal and cervical regions, and of the clavicular region for possible bony deformity or supernumerary rib; and examination by a medical consultant for evidence of apical tuberculosis or enlargement of the thyroid or other cervical glands. Aneurysm or tumor of the sympathetic cord could not be demonstrated.

Total brachial paralysis

The occurrence of paralysis of the lower brachial plexus (Klumpke's paralysis), with cervical sympathetic ophthalmoplegia, has been recognized for years. In this condition the smaller muscles and the flexors of the hand are paralyzed. Trauma (such as birth injury), apical tuberculosis, syphilitic meningitis, and tumors have been known to cause it. Whatever the cause, it affects the anterior roots of the eighth cervical and first and second thoracic nerves before the departure of the white rami communicantes.

The case which I wish now to present is one of total brachial paralysis in which the white rami communicantes of the three nerve roots mentioned here were involved, and a partial Horner's syndrome consequently appeared:

Case 8

In a jeep accident, a 24 year old army officer sustained compound comminuted fractures of the bones of the forearm and a wrenching injury to the left shoulder. The wrench occurred in such a way that the left arm was drawn backward behind the patient's back and shoulder, resulting in extensive damage to the brachial plexus. The fractures were repaired, and they healed overseas; but function of the entire left arm, both motor and sensory, was lost (fig. 5).

The neurologic examination first recorded in the patient's medical history described inequality of the

Fig. 5 (Case 8). Lateral and anterior views, showing atrophy of the left shoulder and arm, following trauma to the left brachial plexus.

pupils and a narrowed palpebral fissure on the left (fig. 6). The left pupil was the smaller. The patient had noticed that rubbing the left side of his face produced tingling, which radiated to the forearm and hand.

The presence of a partial Horner's syndrome, together with referred sensory impulses, seemed to indicate that the lesion must be central to the point at which the rami communicantes of the eighth cervical and first thoracic nerves leave the ventral roots to join the cervical sympathetic nerves. The site of injury would, therefore, be so close to the vertebral foramina that effective nerve suture would be considered impossible. The injury was thought to involve the fifth, sixth, seventh and eighth cervical segments, and the first thoracic.

When I examined the patient, he stated that he perspired more readily and copiously upon the left side of his face than upon the right. This sign, of course, would indicate irritation, rather than paralysis, of the secretory branch of the cervical sympathetic nerve. It was impossible to demonstrate any difference between the two sides of the face; however, on attempts to produce sweating, it was noticed that the left shoulder and arm remained completely dry. No flushing or blanching was observed.

Fig. 6 (Case 8). Ptosis, miosis, and enophthalmos, left (sympathetic ophthalmoplegia).

Further indication of irritation, rather than paralysis, of the branches of the cervical sympathetic nerves supplying the face was the referred tingling which the patient felt in his shoulder and arm when the left side of the face was rubbed or pinched. No evidence of depigmentation of the iris of the affected eye appeared during the period of observation, which was more than twelve months.

Demyelinating Diseases

Ophthalmologists have long been aware of the possibility that acute retrobulbar neuritis may precede by an indefinite time the other changes of disseminated sclerosis. This disease is one of five defined as the demyelinating diseases of the nervous system, which produce ocular symptoms. As the term implies, the pathologic background of these disorders is destruction of the myelin sheaths of the nerve fibers. The demyelinating process exhibits a predilection for the visual fibers, and may attack them at any point of their course from the retina to the occipital cortex.

Classification of a disease with such protean manifestations has been difficult. I believe that the one offered recently by McIntyre and McIntyre[12] seems best. Upon a clinical basis, these writers recognized the remittent, the chronic progressive, and the rapidly fatal type, also called acute multiple sclerosis. The course of this last type is measured in months, rather than in years like those of the first two. Since its symptoms undergo rapid remissions and exacerbations, it may be imagined that acute multiple sclerosis is an accelerated version of the slow-motion process which characterizes the

12. McIntyre, H. D. and McIntyre, A. P.: Prognosis of Multiple Sclerosis, Arch. Neurol. & Psychiat. 50:431-438 (Oct.) 1943.

remittent and chronic progressive forms of the disease.

Charcot's original triad of symptoms of disseminate sclerosis—nystagmus, intention tremor, and scanning speech — are now known to be late manifestations of the disease, and are, in fact, but evidence of cerebellar degeneration from any cause. Two findings are considered pathognomonic: (1) bitemporal atrophy of the optic discs, and (2) absence of the upper abdominal reflexes, while the lower reflexes persist. A highly characteristic symptom is transient blindness of one or both eyes, occasionally with, but usually without, visible change in the optic nerve head.

It is now believed that retrobulbar optic neuritis is due to multiple sclerosis in approximately 50 per cent of the cases. Benedict[13] reported in 1942 that a review of 400 cases of retrobulbar neuritis, examined at the Mayo Clinic between 1920 and 1940, revealed that other symptoms of multiple sclerosis had developed in 41 of the 90 patients in whom this disease had originally been suspected. He further stated that in not a single one of the remaining cases had another cause for retrobulbar neuritis become evident.

In addition to retrobulbar neuritis, with attendant visual loss, other ocular symptoms may occur. Pupillary abnormalities, extraocular palsies, and nystagmus are not infrequent. All of these are transient, but have a tendency to recur. Careful examination of the fields of vision during remission will usually show a faint, indistinct central scotoma.

Acute cerebral disseminated sclerosis

As all of us know, the sensory and motor changes of multiple sclerosis are bizarre. No attempt will be made now to describe them. It is pertinent, however, to mention certain symptoms which occur when the demyelinizing process is cerebral rather than spinal. These are aphasia, emotional instability, myoclonic jerkings, Jacksonian seizures, or even generalized convulsions.

Case 9

Ten days prior to the date of his admission to the hospital, a 36 year old man had experienced blurring of vision in the right eye, followed in twenty-four hours by blurring in the left eye. For five days he had been completely blind. Blindness and pain on movement of the eyeballs or upon pressure over the closed eyelids were his only complaints. He was euphoric.

Ophthalmoscopic examination revealed bilateral optic neuritis, with swelling of the nerve heads of about 3 diopters, and numerous hemorrhages on and around the disc. Neurologic examination was at first entirely negative, and it was concluded that the patient suffered from bilateral optic neuritis of undetermined cause.

On the third hospital day euphoria was conspicuously increased, and slight slurring of speech was observed. Spinal fluid examination at this time revealed 14 white blood cells, and a meningitic gold curve.

Three weeks after admission to the hospital, paralysis of conjugate deviation of the eyes developed, followed within a few days by complete third nerve paralysis, first on the right and then on the left side. Concurrently there appeared tremor of the right arm and leg, and increased emotional lability was evidenced by episodes of spontaneous laughing and crying. The deep tendon reflexes became exaggerated, and the abdominal reflex could not be elicited.

These neurologic signs persisted about two weeks, at the end of which time the tremors and the emotional changes, together with the bilateral internal and external ophthalmoplegia, began to abate. Vision slowly improved, and inflammation of the optic nerve heads gave way to atrophy.

The patient was observed for five months. The only residuals at the end of this time were diminution of vision to 20/50 bilaterally, moderate peripheral depression of the fields of vision, slight enlargement of the normal blind spots, and partial atrophy of the optic nerves.

It was concluded that this was a case of acute cerebral disseminated sclerosis, with bilateral optic neuritis, bilateral complete ophthalmoplegia, acute Parkinsonism on the right side, ataxia, slurring speech, euphoria, and emotional lability.

Disseminated myelitis with optic neuritis

The second case is an example of a condition which is not universally classified under the heading of multiple sclerosis. Known as disseminated myelitis with optic neuritis, neuromyelitis optica, or Devic's disease, it is typified by severe visual loss and paraplegia, with sensory loss and paralysis of the bladder and rectum. About half the patients die within a few weeks or months because of the extensive destruction of the spinal cord. The others are subject to remissions and exacerbations, as in multiple sclerosis. Observers have almost uniformly described the acute symptoms just mentioned as the initial attack of neuromyelitis optica. McIntyre and McIntyre[12] reported a case in a patient who had had bilateral optic neuritis, with recovery of normal vision, two years before typical symptoms of the disease developed.

Visual loss precedes paraplegia in about 80 per cent of the cases. In an occasional instance, paraplegia may not appear, and the condition may thus be considered abortive neuromyelitis optica.

The change in the visual field is usually central and expansive; however, homonymous hemianopsia and segmental defects have

13. Benedict, W. L.: Multiple Sclerosis as Etiologic Factor in Retrobulbar Neuritis, Arch. Ophth. 28:988-999 (Dec.) 1942.

been reported. Recovery is from the periphery, and a fair degree of visual function may be restored. However, the prognosis for vision is not altogether good. In most cases, there is only one episode of visual loss. Walsh[14] records only one case of total permanent blindness among his group of 12 or 15 cases.

Inflammation of the optic discs is rarely seen in remittent or chronic progressive multiple sclerosis. The process in the optic nerve is retrobulbar, and is usually unilateral. Bilateral nerve involvement is a feature of acute multiple sclerosis and of neuromyelitis optica; however, the inflammatory process is visible in the nerve head in only a small percentage of cases.

Case 10

A 29 year old man gave a history of sudden blurring of vision in each eye, with slight pain on movement or pressure upon the eyeballs, beginning two weeks previously. Within ten days the visual loss had become complete.

Initial examination revealed complete central blindness in each eye, with questionable ability to see movement in the periphery of the fields. Both optic discs were extremely inflamed; retinal edema, venous congestion, obscuration of disc markings, and numerous hemorrhages were present. Pupillary response to light was extremely sluggish.

Complete neurologic examination disclosed absence of the abdominal reflex in the upper left quadrant, bilateral hyperactive patellar reflexes, a positive Babinski sign on the right side, and hypesthesia from mid-trunk to mid-calf on the left side. The spinal fluid was normal. The patient was extremely euphoric. A diagnosis of acute disseminate sclerosis was made.

Three weeks later both lower legs became completely paralyzed. Deep reflexes were generally abolished, and paralysis of the bladder and bowel occurred. Sensation was lost from the level of the third rib downward.

The inflammatory process gradually gave way to atrophy of the optic nerve heads. Peripheral form vision improved, but central vision remained absent (fig. 7). After many weeks, the patient regained the ability to read large print. There was but slight improvement in the other neurologic symptoms. Except for the optic nerve, no evidence of cranial nerve involvement appeared.

Both these cases were characterized by bilateral acute optic neuritis with complete loss of vision, followed within a comparatively short time by symptoms of scattered neurologic change. Euphoria was conspicuous in each patient. Recovery of vision began while the other neurologic symptoms were still present, and despite marked optic atrophy. The difference between the two cases lies in the absence of symptoms of transverse or ascending myelitis in the first one.

14. Walsh, F. B.(1), p. 786.

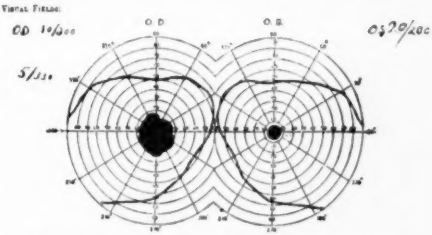


Fig. 7 (Case 10). Central scotomata persisting after recovery of the remainder of the visual fields in neuromyelitis optica.

Miscellaneous Defects in Fields of Vision

The following 5 cases have no points of similarity, but each of them presented features of peculiar interest in the fields of vision.

Tic douloureux associated with defects in the fields of vision

Case 11

A 41 year old man had suffered for two weeks with tic of the first division of the fifth cranial nerve, the paroxysms occurring as frequently as thirty or more times a day. He stated that photophobia and lacrimation sometimes preceded and sometimes followed the paroxysms. Exposure to bright light was apt to precipitate an attack. No trigger zone was present.

Examination of the eyes revealed no abnormality. Visual acuity equalled 20/20 bilaterally. The right field of vision showed an indistinct central scotoma, while the left showed a definite depression of the temporal periphery (fig. 8). From these fields, it was suspected that an organic intracranial lesion existed, possibly tumor.

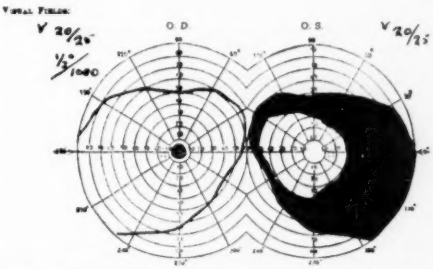


Fig. 8 (Case 11). Defects in the fields of vision accompanying trigeminal neuralgia.

Novocain injection of the trigeminal nerve at the site of exit from the orbit gave remarkable relief from pain and decreased the frequency of the attacks.

This patient was observed for approximately six weeks, during which time the tic completely ceased and the changes in the visual fields gradually disappeared. It was concluded that this had been a case of localized inflammation affecting the ophthalmic division of the fifth nerve and the optic tract near the chiasm on the right side. Whether the inflammation resulted from an infective process or

from disseminate sclerosis is a matter of conjecture, since the patient disappeared from observation.

Trigeminal neuralgia, but not tic douloureux, has been attributed to tumor (meningioma, acoustic neurinoma, and cholesteatoma), and to an infective process affecting either the gasserian ganglion or a peripheral branch of the nerve. I have not found any record of a case in which transient changes in the field of vision were a feature.

Homonymous hemianopic field changes

The next three cases present interesting homonymous hemianopic field changes, indicating lesions of the suprachiasmal portion of the optic pathway. Localization of such lesions is not altogether simple; however, the presence or absence of certain features in addition to the field defects may be of help. These features are (1) incongruity of the pattern of defects caused by a lesion of the optic tract, as opposed to the congruity of pattern in lesions of the optic radiations; (2) macular function, which is spared more frequently in radiational lesions; and (3) motor or sensory symptoms, which may identify the location of a lesion in the anterior or posterior portion of the radiations, or in the lower or higher visual centers. The definite association which fibers from various retinal areas maintain in their course throughout the optic pathways explains, as we know, the sharp demarcation of quadrantic defects, and the appearance of central and paracentral homonymous defects.

The field changes found in these cases are explained by the following quotation from Traquair's "Clinical Perimetry."[15]

"Though no form of field defect is pathognomonic of a cortical lesion, the presence of small homonymous hemianopic scotomata is very suggestive of cortical or subcortical damage, if they occur in otherwise normal fields and without other symptoms. They may occur spontaneously or following injury, and usually affect the apex of one quadrant.

"Central vision is usually good as only part of the fixation area is affected, but reading or figuring may be impaired according to the position of the scotoma (right or left of fixation).

"While such defects may theoretically be caused by a lesion anywhere in the supra-chiasmal part of the pathway, the history, character and course suggest that the cause is vascular, and the site cortical or subcortical, for example obstruction of a small vessel in the tip of the occipital lobe.

"Some cases, of course, are due to injury.

"The usual cause is softening due to arterial obstruction.

"The prognosis as to recovery is improved if it is found that field areas previously blind begin to obtain vision. This commences in the part of the field which corresponds to the periphery of (the cortical) lesion."

15. Traquair, H. M.: An Introduction to Clinical Perimetry, ed. 4, St. Louis, C. V. Mosby, 1942, pp. 266-269.

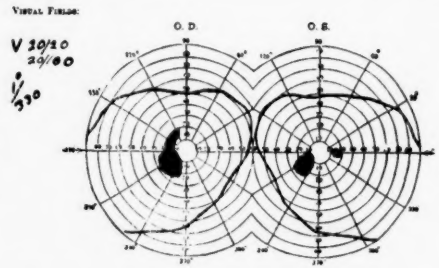


Fig. 9 (Case 12). Right homonymous central scotomata persisting after recovery from acute meningo-encephalitis.

Case 12

The fields shown in figure 9, presenting right homonymous central scotomata affecting principally the apex of a lower quadrant on each side, were found in the case of a young man who had recovered from acute meningo-encephalitis. No other ocular changes were noted, and no sensory or motor changes remained.

The illness had occurred several weeks before the patient came under my observation. He stated that the visual handicap had improved considerably by the time I first saw him. From this statement we may assume that the scotomata were originally more extensive and that they had melted from the periphery, leaving a central defect corresponding to the site of greatest cortical damage, at the tip of the occipital lobe on the left side.

Case 13

The patient was a 29 year old enlisted man, who had sustained a shrapnel injury to the occipital skull at Aachen, Germany, on December 5, 1944. Our examination was made exactly one month later.

He stated that at first he had been completely blind; that he had regained the right field of vision within a few days; and that the left field had cleared considerably. Motor and sensory disturbances had never been present.

Figure 10 shows the left homonymous central defect, indicative of cortical disturbance of the right occipital tip. This change was apparently stationary, since the fields remained the same on examinations repeated at intervals over a period of three months; however, it might be deduced from the history that the change was originally much more extensive, and that improvement from the periphery had taken place.

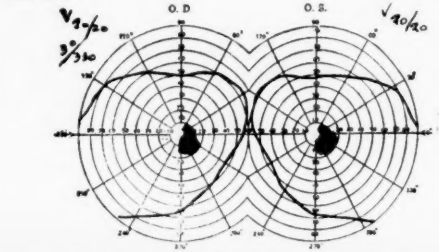


Fig. 10 (Case 13). Left homonymous central scotomata following injury to the occipital skull.

Regression of the cerebral process, with improvement in the field of vision, is not always observed. Figures 11 and 12 show the fields in a case in which progression was apparent.

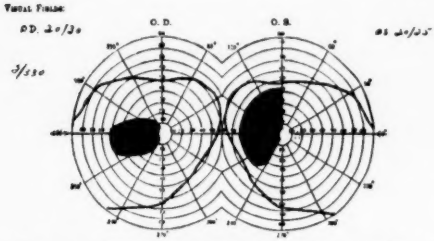


Fig. 11 (Case 14). Visual fields five months after injury to the left temporoparietal area of the skull.

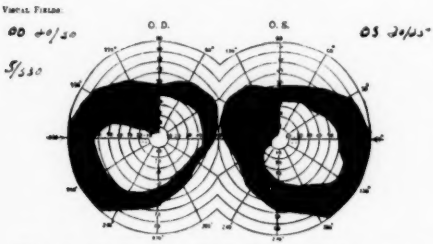


Fig. 12 (Case 14). Visual fields, showing progression of cerebral damage.

Case 14

The patient had sustained a shrapnel injury in the left temporo-parietal area five months before the examination. He stated that he had been completely blind in the right eye following his injury, but had recovered his sight at the end of one month.

He had no motor or sensory disturbances. Ocular examination revealed nothing but the field changes seen in figure 11. The position of the homonymous central defects would explain the difficulty in writing and reading which the patient described.

At first, it was felt that this was a terminal process, similar to that demonstrated by the preceding cases; however, the difficulty in seeing to the right increased, and on the last examination, the defects in the fields of vision had increased (fig. 12). Evidently the damaging cerebral process had spread, and the possibility of brain abscess was to be considered.

In the next case there is no question as to the anatomic location of the injury. It is presented to point out the sharply demarcated quadrant of retained function, illustrating the orderly arrangement and association of fibers within the visual pathway.

Case 15

A mortar fragment struck this patient in the right occipital area on November 22, 1944.

There were no motor or sensory changes. The

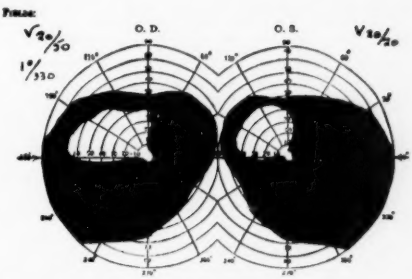


Fig. 13 (Case 15). Left homonymous hemianopsia with anopsia of the inferior right homonymous quadrant after injury to the right occipital skull.

right fundus was considerably obscured by heavy vitreous opacification, evidently due to old hemorrhage. The left fundus was normal. Visual acuity equalled 20/50 in the right eye, 20/20 in the left. The field of vision showed the defect seen in figure 13. It will be seen that only the upper right homonymous quadrants are retained. Definite sparing of macular function is demonstrated.

The patient could read and write well. He carried his head tilted slightly to the right, and stated that he had difficulty in seeing the ground in walking. When he attempted to look directly at a person, he was able to see only the tip of the chin and the left shoulder.

I have seen cases of bilateral complete homonymous hemianopsia in more than one patient who had sustained occipital injury. In these cases the macular fibers alone function, and the fields show what might be described as extreme concentric constriction. The location of the injury, however, would not explain simple concentric constriction of the field, but would suggest complete right and complete left homonymous hemianopsia with a small central seeing area remaining. Visual acuity in these cases is usually quite good.

Nystagmus

Except in the presence of patent evidence of its cause, such as actual neurologic disease or some visible ocular derangement such as congenital cataract or macular coloboma of the retina and choroid, nystagmus is to most of us a puzzling and uninteresting condition. We have been inclined to accept it as probably of congenital origin, and let it go at that. I would not attempt to describe or discuss the various types of nystagmus, nor to mention all of its causes. I do wish, however, to present examples of three types of nystagmus which I believe are rarely seen. All three may be roughly included in the classification of "ocular nystagmus."

Volitional nystagmus

I have seen 2 patients with volitional nystagmus, about 12 cases of which have been recorded in the literature. The movement is always horizontal, with rapid equal excursions. Both unilateral and bilateral forms have been seen. Individuals who can voluntarily produce nystagmus never have true nystagmus. This type is not to be considered as evidence of hysteria.

Case 16

For fifteen years I have repeatedly observed a young man who presented himself at my office in 1933 with the request that he be allowed to exhibit his ability to make his eyes dance. For as long as he could remember he had been able to do this, and he stated that in his youth he was taken to several meetings of eye physicians where he demonstrated the accomplishment. The nystagmus was pendular in type, extremely rapid, and horizontal; it could be sustained for several seconds.

Case 17

In 1943, I observed a second patient with this rare condition. He was a young man undergoing a neurologic investigation because of a complaint of weakness and stiffness of the muscles of the legs and arms. He volunteered that he could make his eyes dance, and proceeded to demonstrate this ability with a nystagmus similar to that described in the first case. He stated that he became dizzy and his eyes grew tired if he tried to prolong the movement more than a few seconds.

Occupational nystagmus

Comparatively few cases of occupational nystagmus have been reported. Of these, cases of miners' nystagmus, which most authorities believe to be functional, compose the majority. Fuchs reported it in compositors, attributing it to the long-enforced strained position of the eyes. Wilson described its occurrence in train dispatchers and crane operators. McCord reported it in men engaged in these same occupations, and further observed that it had appeared in jewelers, draftsmen, and compositors.

The condition has its beginning in the continual movement of the eyes in performing occupations of the types mentioned. It may become established in as little as one year's time, and can usually be cured by a change of occupation.

Poor illumination, mechanical to-and-fro movement of the eyes, and retinal fatigue are combined in the etiology. The mechanical movement, at first a purposeful act, becomes by repetition an involuntary one, which seems governed by irrepressible impulse. In other words, a physiologic process is transformed into a pathologic one.

Case 18

A white draftsman was admitted to the hospital with the complaint of blurring of vision and a sensation of jumping of objects in the horizontal plane. His eyes upon examination were normal except for a low hyperopic error in refraction. Visual acuity without correction equalled 20/50 bilaterally, and was not improved by lenses. There was horizontal oscillation of the eyeballs, the components being of equal rate and amplitude, so that a pendular type of motion resulted. Lateral gaze produced slight exaggeration of the rate, but did not affect the amplitude. The nystagmus was not influenced by accommodative effort.

The patient had followed his occupation for three years, and possessed records showing that his vision when he began it equalled 20/30 bilaterally, and that the eyes were then normal. He was engaged chiefly in close work, doing map plotting and triangulation. Seven months after he began this type of work, he noticed that, following four or five hours of close application of the eyes, he had a sensation of drawing and aching just above the eyes which was accompanied by slight blurring of vision and a sensation of jumping of objects horizontally. Brief rest would abolish these symptoms, and work could be resumed. Gradually, however, the symptoms became constant.

Complete ophthalmologic and neurologic study revealed nothing other than the ocular condition. No indication of vestibular, cerebellar, or cerebral disturbance which might have explained the nystagmus could be found.

It was concluded that this was an actual instance of occupational nystagmus. The patient, relieved of his work for several weeks, showed gradual objective and subjective improvement. He could produce the disturbance easily, however, by prolonged close use of his eyes in reading or playing such games as checkers.

Hysterical nystagmus

In the estimable book, "Modern Trends in Ophthalmology"[16], Millais Culpen has written an enlightening chapter entitled "Psychological Factors in Eye Affections." In its beginning he points out the probable reason that ophthalmologists so frequently fail to recognize psychologic factors in their patients' complaints—namely, that ophthalmology is the most exact of the medical specialties, and attracts those whose interests lie in things that can be seen and measured. I found consolation in reading this, for I have long been unprepared to accept psychoneurosis as an explanation for ocular diseases, and have obdurately doubted the opinion of the psychiatrists on more than one occasion. I am still unwilling to agree with a diagnosis of psychoneurosis in any case until by my own effort I have proved that the condition is not of organic origin.

In the first World War, night blindness was epidemic among European soldiers. Our own armies were comparatively free from it. Hysterical amblyopia, amaurosis, blepharospasm, and paralysis of accommodation were also presented by many soldiers. I recall having taken notes of forty-one methods

16. Ridley, F. and Sorsby, A.: Modern Trends in Ophthalmology. London, Butterworth & Co., 1940, p. 50.

for detection of simulated ocular disorders described by Professor Lauber of Vienna. He had devised many of these methods during his experiences as a medical officer in the Austrian Army during World War I.

Nystagmus as a hysterical phenomenon among soldiers has apparently not been frequently recognized. Culpen stated that miners' nystagmus is comparable, from the standpoint of its psychologic basis of origin, to war night blindness. He further recognized and described similarities between the actions of miners with nystagmus and those of soldiers with hysterical ocular symptoms —for example, the spasm of convergence upon forceful separation of the eyelids, and the contracture of the superior rectus muscles, which tends to keep the pupils hidden under the upper eyelids.

Hysterical nystagmus presents jerky and irregular movements of the globes, practically always in the horizontal plane. The movement is not, of course, true nystagmus.

I wish to describe a case which occurred at the Army General Hospital where I was stationed during most of the recent war.

Case 19

An enlisted man reported to the eye clinic with the statement that he had always experienced difficulty in holding his eyes fixed upon objects, and that he could best do this by turning the face slightly away from the direction of his gaze. For the past three or four years, he had been conscious of a horizontal jumping movement of objects upon which he tried to fix his eyes.

Visual acuity equalled 20/50 bilaterally. There was a low hyperopic error in refraction, correction for which did not improve the vision. The fields of vision and the optic fundi were apparently normal. An irregular, jerky, pendular type of nystagmus was present in the eyes forward position. The movement became quite gross on rotation of the eyes to the left, and was not so greatly increased on rotation to the right. The patient carried his head slightly to the right.

A neurologic consultation revealed sufficient evidence to justify a diagnosis of psychoneurosis with a hysterical type of nystagmus.

It was found that, under hypnosis, visual acuity equalled 20/20 bilaterally and the nystagmus disappeared. Hypnotherapy was continued, and the patient had improved considerably when his assignment at the hospital was changed. Apparently displeased by this change, he immediately presented diminution of vision and nystagmus. Psychotherapy was intensified, and after about twelve sessions of hypnotism the improvement in visual acuity was sustained, and nystagmus was either lessened or completely absent when he was observed.

The greatest contribution to real security that science can make is through the extension of the scientific method to the social sciences and a solution of the problem of complete avoidance of war. —E. U. Condon: Science and Security, Science 107: 665 (June 25) 1948.

CANCER OF THE LARGE INTESTINE

Diagnosis and Management

W. B. McCUTCHEON, M.D.
and
RAIFORD D. BAXLEY, M.D.
DURHAM

Bockus[1] states that malignant tumors of the large bowel are responsible for approximately 27,000 deaths in the United States each year, and that the yearly death rate from malignant lesions of the colon and rectum probably equals that from gastric cancers.

Anatomy of the Large Intestine

The large intestine is a muscular tube, lined by a mucosa of columnar cells. These cells form simple, tubular glands. Aggregates of lymphoid tissue appear in the muscularis mucosa and submucosa. Goblet cells are numerous in the glands. The muscular elements are arranged in an outer longitudinal layer and an inner circular layer. The outer longitudinal muscular elements are grouped into three prominent bands or *taeniae*. Because those bands are shorter than the other coats of the intestine, the organ presents a sacculated form. Peritoneal outpouchings filled with fat form the appendices epiploicae.

Divisions

The large intestine begins at the ileocecal valve and extends to the anus—a distance of 1.5 meters. It is divided into cecum, ascending colon, transverse colon, descending colon, iliac colon, sigmoid colon, rectum, and anal canal. The *cecum* is the large blind pouch situated normally in the right lower quadrant above the lateral third of the inguinal ligament. It receives the terminal ileum, and the vermiform appendix arises from its apex.

In general the *ascending and descending colon* ascends and descends along the posterior abdominal wall, lying on either side of the iliacus, the quadratus lumborum, the origin of the transversus abdominis, and the right and left kidneys. The ascending and descending colon are invested anteriorly, medially, and laterally by peritoneum.

The *transverse colon* crosses the abdomen

From the Department of Surgery, Watts Hospital, Durham, North Carolina.

1. Bockus, H. L.: Gastroenterology, Philadelphia, W. B. Saunders Company, 1946, v. 2, pp. 743-788.

from side to side in the upper umbilical region. It forms, with the ascending and descending colon, the hepatic and splenic flexures, the latter being more acute and more deeply placed. It is almost completely covered with peritoneum (the transverse mesocolon) which is attached to the inferior border of the pancreas. Above it are the liver, gallbladder, greater curvature of the stomach, and lower end of the spleen. Below, from right to left, are the descending part of the duodenum, the head of the pancreas, and some loops of small bowel.

Lying in the left iliac fossa, the *iliac colon* connects the descending colon with the sigmoid. The *sigmoid* is completely invested with peritoneum which forms a mesentery. Behind the sigmoid lie the external iliac vessels.

The *rectum* is about 12 inches long and ends in an ampulla, a little below the tip of the coccyx. Its internal surface presents three definitely transverse folds (valves of Houston), formed by the circular fibers of the rectal wall. The *anal canal* is 2.5 to 4 cm. in length, and is directed downward and backward. It is supported by the levatores ani and encircled by the internal and external anal sphincters. Its upper half contains the rectal columns, rectal sinuses, and anal valves.

Blood supply

The blood supply to the terminal ileum, cecum, appendix, and ascending and transverse colon is derived from the superior mesenteric artery, through its ileocolic, right, and middle colic branches. The variations in the size and origin of the right colic artery make segmental resection of the ascending colon hazardous. The marginal artery of the right half of the colon runs parallel to it in the mesentery of the bowel, and anastomoses with the ileocolic and right colic arteries. The middle, right, and left colic arteries anastomose with each other.

The descending colon, sigmoid, and upper rectum derive blood supply from the inferior mesenteric artery, through the left colic, sigmoidal, and superior hemorrhoidal arteries. The middle and lower rectum and the anal canal are supplied by the middle hemorrhoidal and inferior hemorrhoidal arteries, the former being direct branches of the anterior divisions of the internal iliac arteries, and the latter being branches from the internal pudendals.

Lymphatic drainage

The lymphatic drainage tends to follow the vascular arrangement. *Epicolic* nodes are situated directly on the intestinal wall, and these drain to *paracolic* nodes along the mesial margin of the bowel. These drain into intermediate groups along the colic arteries, the nodes along the ileocolic artery being more profuse. The drainage from the intermediate nodes is into central groups situated along the aorta at the origins of the mesenteric arteries. Lymph channels from the lower part of the anal canal pass downward, crossing the perineum to enter the superficial inguinal nodes. From the upper part of the anal canal and from the rectum, drainage is into the lumbar nodes. Some of the drainage of the lower rectum is across the ischiorectal fossa to the hypogastric, common iliac, and lumbar nodes. In general, the entire drainage of this area of the bowel follows the course of the hemorrhoidal arteries.

Nerve supply

The nerve supply of the entire large bowel (colon, rectum and anal canal), except for the sensory innervation of the anus and the motor innervation of the external sphincter (which are supplied through the internal pudendal nerve), is derived from the autonomic nervous system. Vagus fibers are said to extend as far as the proximal third of the transverse colon, through the celiac plexus. Parasympathetic fibers to the rest of the colon and to the rectum are derived from the sacral outflow through the pelvic plexuses. Sympathetic fibers originate in the thoracolumber system and are distributed through the celiac, superior and inferior mesenteric, hypogastric, and pelvic plexuses[2].

In general, the sympathetic nerves are inhibitory to large bowel activity, but function as motor nerves to the ileocolic and internal anal sphincters. The parasympathetic nerves have an augmentor effect on the colon, but are inhibitory to the internal anal sphincter. No parasympathetic supply to the ileocolic sphincter has been demonstrated. The external anal sphincter is under voluntary control (striated muscle), and when tonic will inhibit defecation (aided by the levators and perineal muscles.)

Physiology of the Large Intestine

The colon receives about 400 Gm. of ma-

2. Gray, H.: Anatomy of the Human Body, revised by W. H. Lewis, ed. 23, Philadelphia, Lea & Febiger, 1936.

terial daily, through the ileocolic valve. This liquid material is converted into approximately 150 Gm. of feces, chiefly through water absorption. Thus, the contents of the right colon are largely liquid, and obstruction is rarely seen in malignant lesions involving this part of the bowel. Conversely, the contents of the left colon are solid, and neoplastic or inflammatory lesions here usually cause obstruction.

The passage of feces into the rectum is accomplished by mass movements, instead of the peristaltic, segmental, or pendular movements so characteristic of the small intestine. The familiar gastrocolic reflex is an example of mass movement.

Pathology of the Large Intestine

Inflammations

The large intestine is subject to the usual changes seen in a musculomembranous tube, such as mucosal ulceration, inflammation, and neoplasia. Inflammation may be acute or chronic, the latter leading to scar formation and strictures. Inflammation may be caused by bacteria, parasites, or trauma. Granulomatous inflammation is usually due to amebae, fungi (actinomycosis), tuberculosis, or nonspecific factors. Altered mucosal and muscular relationships, such as are seen in diverticulosis, contribute anatomic peculiarities responsible for the entity, diverticulitis.

Neoplasia

Ulcerative or nonulcerative neoplasia is now believed to originate in the common polyp. At the Lahey Clinic[3], all stages of mucosal change, from normal mucosa to adenocarcinoma, have been demonstrated histologically in polyps.

Raiford[4] states that malignant growths of the large bowel are most apt to occur in the rectum, sigmoid flexure, cecum and ascending colon, transverse colon, descending colon, hepatic flexure, and splenic flexure, in that order.

Two varieties of adenocarcinoma are observed in the large bowel—the fungating and the annular. Either variety may cause acute obstruction, but this complication is more often noted in the annular type of growth. Epitheliomas originate in the lower anal canal, are nearly always of the squamous variety, and form from 3 to 5 per cent of all cancers of the anus and rectum. Basal cell cancer is quite rare, and few cases have been reported in the literature.

Cancer of the large bowel spreads by direct extension to contiguous organs. Local and distant spread through lymphatic and vascular channels also occurs. Metastasis to the lymph nodes is noted in 60 to 70 per cent of the cases, the incidence being higher in rectal lesions and lower in lesions of the colon. Experience has taught that tumors low in the rectum may metastasize to the upper part of the bowel; that retrograde and interrupted lymph node spread occurs; and that there is little relationship between the size of the lesion or the duration of symptoms and the occurrence of metastasis. The regional nodes, the liver, and the lungs are the common metastatic sites, but unusual sites, such as the bones, pancreas, kidneys, heart, thyroid, breast, spleen, and mediastinum, have been reported.

Symptoms

Because of anatomic, physiologic, and pathologic differences in the right and left colon, the symptoms vary with the location of the neoplasm.

Right colon

Pain localized to the right lower quadrant, epigastrium, or paraumbilical region is a common complaint. The intensity of the pain may vary from discomfort to severe colicky pain (with a tumor of the hepatic flexure). This pain is accompanied by dyspeptic symptoms—anorexia, nausea, vomiting, and gaseous distention. Diarrhea is more commonly noted than constipation, but either may be significant. Weakness and fatigue are prominent complaints with lesions of the cecum and ascending colon. Anemia is often marked, but it may be difficult to demonstrate blood in the stool. There may be a palpable tumor. Late symptoms include weight loss, cachexia, and abscess formation. Obstruction may be seen in this group of tumors, but is not so common as with left-sided lesions.

Malignant lesions of the right colon must be differentiated from appendiceal abscess, anemia, *tuberculosis, ileocolitis,* peptic ulcer, gallbladder disease, renal tumors, fecal accumulations, and gastric cancer.

Left colon

With the exception of lesions around the

3. Swinton, N. W. and Warren, S.: Polyps of the Colon and Rectum, J.A.M.A. 113:1927-1933 (Nov. 25) 1939.
4. Raiford, T. S.: Carcinomas of the Large Bowel, 101:863-885 (March); 1042-1050 (April) 1935.

splenic flexure, this group of neoplasms rarely cause dyspeptic symptoms; but pain, poorly localized to the left or lower part of the abdomen, varying in severity, and at times radiating into the back, is frequently present. The patient does not obtain relief from the attacks of colicky pain until there is complete evacuation. The attacks are intensified by constipation, which is prevalent. Passage of gas which has been trapped above the lesion may afford relief. Attacks grow more numerous, and may terminate in complete, sudden obstruction. Increasing constipation necessitating strong laxatives may alternate with diarrhea. Blood and mucus appear in the stool, the blood being loosely attached and more commonly noted with the lower lesions. Late symptoms are those of weight loss and general deterioration.

Malignant lesions of the left colon must be differentiated from *diverticulitis*, fecal impaction, benign tumors, hemorrhoids, spastic colitis, *lymphopathia venereum*, and condylomas.

Amebiasis may simulate lesions of both sides of the colon.

Rectum

Carcinoma of the rectum deserves a special paragraph. A change in bowel habit is the most constant symptom. There may be constipation, diarrhea, or constipation alternating with diarrhea. The appearance of blood and mucus on the outside of the stool may be one of the earliest symptoms. Pain may vary from a discomfort in the anal region to pronounced pain, when the lesion is within the grasp of the sphincter. It may be severe, radiating to the back, hips, and thighs, in cases of sacral extension (nerve root pain). Dyspeptic symptoms are rare except in cases of general peritoneal spread.

Stools may become small or "ribbon-like" in a few lesions of the anal canal. Usually this is a late manifestation, indicating that the lumen of the anal canal has been diminished in diameter. Loss of weight is an advanced finding. Urinary symptoms such as increased frequency or tenesmus indicate vesical invasion or pressure by the tumor.

Diagnosis

The first step in diagnosis is a careful evaluation of the history, which should be taken with special reference to any recent changes in bowel habit. A general physical examination may reveal supraclavicular nodes or unsuspected abdominal masses. Routine laboratory studies will at times demontrate severe unexplained anemia, increase in the erythrocyte sedimentation rate, or blood in the stool. A roentgenogram of the chest is important to rule out metastatic spread. Usually, however, certain special examinations are necessary to establish a diagnosis of cancer of the large intestine—especially an early diagnosis.

The rectal (digital) examination is mentioned as a special examination, because it is so frequently neglected in the general physical examination. Bockus[5] has stated that about 75 per cent of all rectal tumors are within the reach of the index finger. Digital examination also gives an idea as to the size, extent, fixation, and type of lesion present. Extrarectal masses (Blumer's shelf) due to the spread or fixation of lesions higher in the bowel are occasionally noted.

Proctosigmoidoscopic examination and barium enema examination should be used to supplement each other, as each has its place. It is stated that 75 per cent of cancers of the large bowel can be visualized by careful instrumental examination, and this group of malignancies may be examined by biopsy. Direct visualization of the lower bowel offers the best method for the early detection of single or multiple polyps, which should be removed for biopsy.

Buie[6] has called attention to the difficulties involved in the roentgen diagnosis of lesions of the lower bowel, the degree of accuracy being around 75 per cent for rectosigmoidal lesions and 50 per cent for rectal lesions. When roentgen studies are negative in a patient with symptoms related to the large bowel, they should be repeated. One cannot expect accurate roentgenograms unless patients are properly prepared, as the colon must be empty of all fecal material.

A roentgen diagnosis of cancer of the large bowel is made on the basis of: (1) the demonstration of an obstruction to the flow of barium, (2) the demonstration of a filling defect with or without ulceration, or (3) the appearance of a stricture or localized narrowing, suggesting an annular lesion. Secondary roentgenologic observations include fistulas, fixation, and surrounding abnormal densities suggestive of masses. Lesions of the flexures and of the posterior cecal wall are notoriously difficult to demonstrate.

5. Bockus, H. L.(1) p. 701.
6. Buie, L. A.: Carcinoma of the Rectum, Rectosigmoid, and Sigmoid, Tr. Am. Proctol. Soc. 24:71 (June) 1923; S. Clin. North America 4:361-367 (April) 1924.

Lahey[7] has called attention to two roentgen findings which may give an idea as to the duration and resectability of lesions of the colon: (1) When annularity is noted, the lesion has existed a minimum of six months. (2) If there is canalization of an annular leson, it is to be assumed that the lesion is from six to twelve months old.

A word of caution should be given about administering barium by mouth in cases of suspected partial obstruction, as the partial obstruction may be converted into complete obstruction. Barium should not be forced through an area of stricture, as a ball-valve effect may lead to overdistention of the bowel or even to perforation of an area which has become thin as a result of obstruction.

When examining patients with intestinal obstruction, it is important to remember that about 40 per cent of patients with cancer of the large bowel will present obstructive symptoms. Burgess[8] has written that if an obstruction can be localized to the colon, and if hernias and intussusception are excluded as a cause, the chances are nine to one of its being due to a malignant lesion, and six to one of its being on the left side.

The average duration of symptoms before definitive treatment is initiated is from nine to twelve months. The diagnosis is usually made a few months later in lesions of the right colon than in those of the left colon. Patients with cancer of the large bowel are still coming to operation relatively late—as long as eight to twelve months after the first appearance of symptoms. This delay has been attributed to the patient in the majority of instances, to the physician in about 25 per cent of the cases, and to both physician and patient in about 30 per cent of the cases. In 1938 Buie reviewed 1073 cases of rectal malignancies, and found that 48.5 per cent had been operated upon for conditions not related to the malignant lesion. As the medical profession becomes more cancer conscious, such errors are diminishing in number, but they still occur frequently.

It is important to investigate thoroughly any patient with diarrhea lasting more than three to four days. Complete studies of the colon should be made before hemorrhoidectomy in patients past 40 years of age. One should remember that cancer may co-exist with benign anorectal lesions. The fact that

Fig. 1 (Case 1). Benign rectal polyp. Note the orderly arrangement of cells.

polyps and malignancies may occur as multiple primary lesions should further stimulate one to study the entire bowel before any treatment is planned. The neglect of two other procedures often causes delay in diagnosis: (1) failure to explore thoroughly the large bowel at laparotomy performed for more common abdominal lesions, and (2) failure to examine all tissue removed at every rectal operation.

The diagnosis of lesions of the large bowel has not advanced as rapidly as the treatment. This fact probably formed the basis for Cattell's recent statement[9] that the lowering of the mortality rate from carcinoma of the large bowel in future years will depend upon earlier diagnosis rather than upon purely surgical advances.

Presentation of Cases

We wish to present some of our experiences in dealing with lesions of the colon.

Case 1

A 72 year old white woman came to the outpatient clinic complaining of rectal bleeding and of "something dropping out of my rectum." Rectal examination disclosed a soft, pedunculated mass, freely movable, which measured about 4 by 2 by 2 inches in size. The mass arose from the left rectal wall.

The patient was hospitalized. General examination and routine blood studies were noncontributory except for a mild secondary anemia. The mass was visualized through the sigmoidoscope on December 9, 1947. The lesion appeared to arise from the left anterolateral rectal wall, just distal to the inferior rectal valve. The base was large, and there were several projections from the base. Biopsy was performed, and the pathologist rendered a diagnosis of rectal polyp, benign. Microscopically, projections of rectal mucosa, composed of several layers of cells arranged in an orderly manner, were noted (fig. 1).

7. Lahey, F. H.: Prognosis of Patients with Carcinoma of the Colon, Rectosigmoid, and Rectum, S. Clin. North America 27:670-674 (June) 1947.
8. Burgess, A. H.: The Treatment of Obstruction of the Colon, Brit. M. J. 2:547-556 (Sept. 29) 1923.
9. Cattell, R. B.: Pathogenesis of Cancer of the Large Bowel, paper delivered at the Watts Hospital Symposium, Durham, North Carolina, February, 1948.

Fig. 2 (Case 2). Undifferentiated carcinoma invading the wall of the colon.

Fig. 3 (Case 3). Adenocarcinoma of the descending colon. Note the dark staining and irregularity of the nuclei.

There was no invasion of the connective tissue.

Because of the possibility of multiple lesions, barium enema examination was performed, but revealed no additional lesions of the colon. The rectal lesion was fulgurized under spinal anesthesia, on two occasions. Sigmoidoscopy before the patient's discharge showed that the polyp had disappeared.

The patient was followed in the outpatient clinic. The rectal bleeding ceased, and she was entirely comfortable. However, sigmoidoscopic examination on March 22, 1948, revealed beginning stricture formation, which had not been detected by digital examination earlier. There was no evidence of recurrence of the polyp.

Case 2

A 68 year old white man was admitted to Watts Hospital on September 23, 1946, complaining of aching pains across the upper abdomen of three months' duration. The pains were worse after meals. He had also noted increasing constipation and dark stools, and had lost 14 pounds in weight during the last seven weeks.

Examination revealed a tumor mass in the right upper quadrant. This was irregular, tender, and hard, and measured about 3 by 4 inches in size. Blood studies showed only a slight secondary anemia. On barium enema examination an obstructing lesion was noted just proximal to the hepatic flexure.

After suitable preparation of the patient, operation was performed through an upper abdominal, transverse incision, under spinal anesthesia. A hard, circular mass, involving the colon just proximal to the hepatic flexure, was discovered. The liver was free of metastases, but there were several hard, enlarged glands at the root of the mesentery of the small bowel, which could not be resected. The cecum, terminal ileum, ascending colon, and proximal third of the transverse colon were resected. Primary, closed, side-to-side ileocolostomy was accomplished, and the abdomen was closed without drainage. The postoperative course was uneventful except for delay in the function of the anastomosis. The patient was discharged on the eleventh postoperative day, eating a regular diet.

The pathologist reported an undifferentiated adenocarcinoma, with extensive infiltration of the wall of the colon. The serosa was involved by sheets of polygonal cells showing numerous mitoses (fig. 2). This patient has maintained his preoperative weight and is now working as a painter. A five year survival is not expected in this case.

Case 3

A white woman, aged 49, was admitted to Watts Hospital on January 1, 1948, with the chief complaint of passing large amounts of blood in her stools. She had noted a small amount of blood in her stools for a year, but had attributed this to hemorrhoids. The bleeding became excessive just a few days before admission. She also complained of gaseous distention following meals, which had been present at intervals for one year, but more pronounced for four months. For three months she had noted cramping pain beginning on the right side of the abdomen in the upper quadrant, and radiating into the left lower quadrant.

General examination was negative except for tenderness beneath the left costal margin. Laboratory examinations revealed a secondary anemia, the hemoglobin being 76 per cent. Roentgen examination revealed a filling defect in the proximal third of the descending colon, measuring 1¾ inches in length and showing ulceration.

After preparation of the patient, operation was performed on January 8, 1948. An annular carcinoma just below the splenic flexure was found to be adherent to the posterior and lateral abdominal wall. There was no gross evidence of spread to the lymph nodes. A primary resection, with an open, end-to-end anastomosis was done. The pathologist reported adenocarcinoma, grade II (fig. 3). There was no evidence of lymphatic involvement. The postoperative course was uneventful.

Recently the patient returned to the hospital for hemorrhoidectomy, because of bleeding hemorrhoids.

Case 4

A 45 year old white woman was admitted to Watts Hospital on April 2, 1946, complaining of hemorrhoids. Rectal examination revealed a mass, 1 inch in diameter, situated at 12 o'clock, 1½ inches above the anal orifice. A biopsy was made, and the pathologist reported chronic inflammatory tissue. It was planned to perform another biopsy, but the patient refused and signed a hospital release.

When the patient returned a month later, biopsy revealed an infiltrating, grade III cancer of the anorectum. No barium enema examination was done. A combined abdominal-perineal resection, one stage, was performed on May 24, 1946. The tumor was about an inch in diameter and was situated on the posterior rectal wall, just proximal to the internal

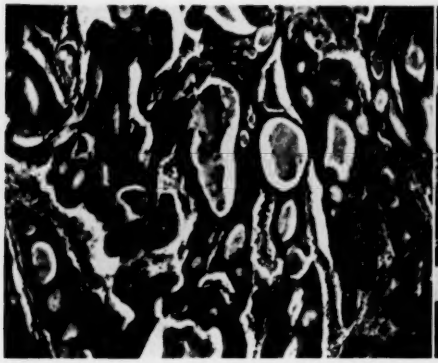


Fig. 4. Photomicrograph of the original lesions reported in case 4. Contrast the irregularity of the glands with the well differentiated glands in figure 5.

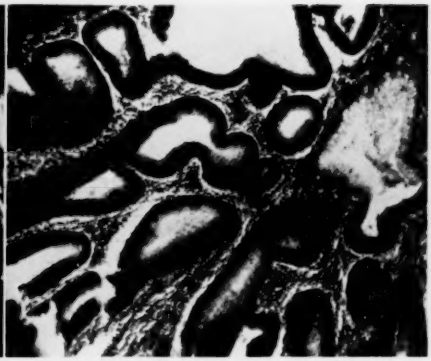


Fig. 5. Photomicrograph of one of the sections through a polyp removed in case 4. No evidence of malignancy is seen in this section. Other sections revealed malignant degeneration.

sphincter muscle. There was slight fixation of the mass to the fascia posteriorly. Since extensive polyposis of the sigmoid and descending colon was present, all of the sigmoid and most of the descending colon were removed.

There was mild shock postoperatively, but this was controlled with repeated blood transfusions. The patient had a febrile course, with temperature elevations up to 102 F., for nearly a week. She was discharged, asymptomatic, on the twenty-first postoperative day.

The pathologic report revealed frank adenocarcinoma of the original tumor (fig. 4), with no involved lymph nodes. The mucosal surface of the rectum, sigmoid, and descending colon showed multiple polyps, pedunculated and sessile (fig. 5). Sections through one of these polyps, near the anal region, showed malignant degeneration.

It is certain that this patient has more polyps in the remainder of the colon, as this is a case of multiple polyposis. Total colectomy has been advised, but the patient has refused. Undoubtedly, she is a candidate for further malignant polypoid degeneration. At present, the colostomy functions well, and the patient is able to do housework. She has no complaints.

Case 5

A white woman, 49 years of age, was admitted to Watts Hospital on November 27, 1947, with the complaints of rectal fullness, bleeding from the anus on occasions for several months, and "flattened" stools of several weeks' duration.

Rectal examination disclosed a hard mass, 1½ by 2 inches in size, situated 3 inches above the anal orifice on the right side of the rectum. Sigmoidoscopy and biopsy confirmed the clinical diagnosis of adenocarcinoma of the rectum.

A combined, one-stage, abdominal-perineal resection, with left inguinal colostomy, was done on December 4, 1947. The posterior wound was partially closed. On the second postoperative day, inspection of the colostomy revealed necrosis of the colon segment. The inguinal incision was enlarged and more descending colon was pulled out on the abdominal wall, so that healthy bowel protruded. The future postoperative course was uneventful, and the patient was discharged on the nineteenth postoperative day, with the colostomy functioning well.

The pathologist reported an adenocarcinoma of the rectum, the glands being arranged in a disorderly fashion (fig. 6). The mucosal cells varied in size and shape, and showed mitotic figures. No involvement of the lymphatic glands was noted.

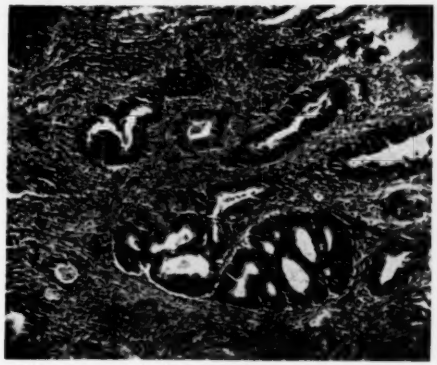


Fig. 6 (Case 5). Adenocarcinoma of the rectum.

This patient has continued to do well.

Case 6

A 46 year old white woman was admitted to Watts Hospital on October 13, 1947, complaining of a watery, bloody rectal discharge of ten months' duration. She had also noted pressure sensations and a frequent desire to defecate.

Rectal and sigmoidoscopic examination disclosed a fungating lesion, 3½ by 2½ inches, situated on the posterior rectal wall, 6 inches cephalad. All but about ½ inch of the circumference of the bowel was involved. Biopsy revealed an adenocarcinoma of the rectum, the tumor being composed of large, irregular glands, lined by hyperchromatic columnar cells, with numerous mitotic figures. In some areas, the glands were filled with mucus. X-ray examination following a barium enema revealed a large filling defect of the proximal portion of the rectum.

Combined abdominal-perineal resection, with left inguinal colostomy, was done in one-stage, after suitable preparation. The posterior wound was partially closed. The postoperative course was unevent-

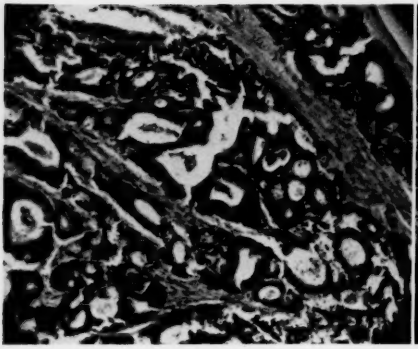


Fig. 7 (Case 7). Adenocarcinoma of the transverse colon.

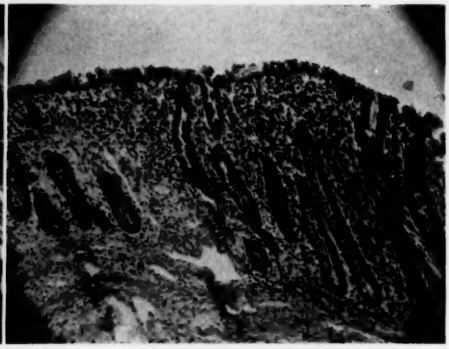


Fig. 8 (Case 8). Regional ileocolitis. Note the cellular infiltration. The glands are regular with well differentiated cells.

ful. The pathologic report confirmed the biopsy findings. There was no evidence of lymph node involvement.

At the present the patient has a well functioning colostomy. She feels well and does her housework.

Case 7

A white man, aged 76, was admitted to Watts Hospital on November 27, 1941, with the complaint of paraumbilical pain following meals. The pain was crampy and intermittent in nature. He denied nausea or vomiting, but stated that constipation was moderately severe. There had been one episode of acute pain in the right lower quadrant, six weeks prior to admission.

The general examination and routine laboratory studies were noncontributory. Barium enema examination of the colon revealed an obstructing lesion about 8 inches distal to the hepatic flexure. At operation, an annular lesion was found in the right side of the transverse colon. There was one enlarged gland present in the mesentery, but the liver was free of metastases. A primary resection with end-to-end anastomosis was done, and a complementary cecostomy was carried out. The pathologist reported grade II adenocarcinoma (fig. 7), without lymphatic involvement.

The postoperative course was uneventful, except for a fecal fistula at the site of the colostomy. The fistula closed before discharge, however. This patient returned to work and seemed to be in good health generally. One year postoperatively, he died suddenly on the street. An autopsy was not obtained.

Case 8

A 21 year old white woman was seen in consultation about a month after laparotomy, performed because of a tumor mass in the right lower quadrant. The operator stated that at the time of exploration an inflammatory mass was encountered, which consisted of cecum, transverse colon, terminal ileum, and ascending colon. There was a fistulous tract between the transverse colon and the cecum. This had been divided and the ends had been closed. The appendix had been removed previously.

At the time of the consultation no abdominal mass was noted, but there was a small fecal fistula still draining through the recent right rectus incision. The incision had been recently infected, but was granulating cleanly when we saw the patient. Cultures from the fistula had been negative for fungi and acid-fast organisms. A recent barium enema examination showed a filling defect of the terminal 12 inches of the ileum, the cecum, and the proximal ascending colon, and an intraperitoneal extravasation of barium in the region of the cecum.

A diagnosis of regional ileocolitis was made, and resection of the right half of the colon was advised. At operation on July 17, 1947, it was found that the terminal ileum, cecum, ascending colon, proximal transverse colon, and omentum formed a dense, adherent mass. A resection of the terminal ileum, cecum, ascending colon, and proximal transverse colon was done. Continuity of the bowel was established by open, side-to-side ileocolostomy.

The pathologist reported marked edema and thickening in the resected specimen, with mucosal hypertrophy. Several sinus tracts were noted in the ileocecal region. Microscopically, the cellular infiltrate consisted of neutrophils, lymphocytes, plasma cells, and foreign body giant cells (fig. 8). The sinus tracts were lined by chronic granulation tissue. The pathologic diagnosis was regional ileocolitis.

The patient has been seen on numerous occasions since hospitalization. She has gained 25 pounds in weight and has no complaints referable to the abdomen. Bowel movements have continued to be normal as to frequency, size, color, content, and consistency.

Case 9

A 38 year old white man was hospitalized on November 18, 1937, because of cramping pain in the right lower quadrant. Physical examination revealed a firm mass, 4 by 5 inches in size, located in the right lower quadrant. On barium enema examination an extrinsic cecal mass, with marked narrowing and loss of flexibility of the terminal ileum, was observed. The impression was regional ileocolitis. At the patient's request, he was discharged.

He was re-admitted on December 27, 1937, complaining of severe abdominal pain. The mass was still present. An exploratory laparotomy was performed on December 29, 1937, and a large abscess was encountered and drained. The impression at the time of operation was regional ileocolitis or abscess of appendiceal origin. The postoperative course was uneventful, and the patient was discharged with a small amount of drainage.

Over a period of twelve months, however, he had intermittent episodes of abdominal pain with attacks of profuse drainage. At times the drainage was of fecal character. Operation was advised, and an inflammatory mass involving the terminal ileum, the cecum, and the anterior abdominal wall was resected on January 20, 1939. Bowel continuity was re-established by side-to-side open ileocolostomy. The post-

operative course was uneventful.

The pathologist reported a severe, nonspecific inflammatory reaction involving the terminal ileum, cecum, and ascending colon. The appendix showed dense fibrosis; the lymph nodes, hyperplastic lymphadenitis. The diagnosis was regional ileocolitis.

This patient has been followed carefully since operation. Initially there was considerable induration of the operative wound, with drainage. Later this subsided and the wound healed. Today, he is working as an industrial laborer and is free of abdominal or intestinal symptoms.

These last two cases are presented to illustrate the similarity between regional ileocolitis and carcinoma of the right colon. In the more severe cases of regional ileocolitis, the treatment is identical with that for carcinoma, but preoperative differentiation is desirable.

Management

Prevention

All polyps should be treated surgically as soon as they are discovered, for it is now accepted that they are precursors of malignant lesions. Before any local treatment is begun, adequate sections should be taken from the bases of polyps to rule out already existing malignancy. One should also remember that these lesions may be multiple before electing simple local treatment.

Benign polyps within reach of the sigmoidoscope are best treated electrosurgically (by fulguration). One should guard against cauterizing too deeply, as the resulting necrosis may lead to delayed perforation of the rectum or sigmoid. These patients must be followed carefully in order to detect and prevent stricture formation. Polyps beyond the reach of the sigmoidoscope may be removed by opening the bowel. If sections taken through the bases of these polyps show frank or suspicious evidence of malignancy, segmental resection with end-to-end anastomosis should be performed.

Preoperative preparation

Many patients with carcinoma are also victims of one of the degenerative diseases. In such cases the advice of an internist should be sought in selecting the optimum time for surgery. Co-existing diseases such as chronic bronchitis, nephritis, nephrosclerosis, chronic heart disease, hypertension, and prostatic hypertrophy must be under control before operation.

Today, preoperative preparation plays a major role in the management of patients with malignant lesions of the large bowel. Many of these patients are suffering from dehydration, anemia, and hypoproteinemia. Single laboratory determinations of the plasma proteins are not reliable, as both dehydration and infection will elevate the blood proteins. As dehydration is corrected, simultaneous hematocrit and plasma protein determinations will give a better insight into the patient's nutritional status. It is better to correct protein deficiency by oral feeding than by intravenous protein hydrolysate therapy, but the latter method should be used in patients who cannot tolerate diets high in protein. A normal plasma protein level is important to wound healing and to the proper functioning of anastomoses.

The correction of anemia is best accomplished through multiple transfusions of whole blood. Each pint of whole blood contributes 18 Gm. of plasma protein and 75 Gm. of hemoglobin, which can be converted into plasma protein by snythesis. Meyer routinely gives 2,000 cc. of whole blood to every candidate for colon resection before operation. Administration of red cell suspensions will correct anemia more rapidly, as each flask contributes 150 Gm. of hemoglobin. This method does not help raise the plasma proteins, however.

Preoperatively, patients should receive massive doses of the B complex of vitamins, and of vitamin C. These may be administered orally or parenterally. If oral feeding is elected, at least 100 Gm. of protein and 500 Gm. of carbohydrate in the form of low residue foods should be given daily.

Sulfathaladine is given in doses of 3 Gm. every four to six hours, for at least five days before surgery. During the first few postoperative days sodium sulfadiazine may be given intravenously, to achieve an initial blood level of 8-12 mg. per 100 cc. As an added precaution, the administration of streptomycin and penicillin may be begun a few hours preoperatively and continued five to six days postoperatively.

The colon should be cleansed by enemas during the last three days before surgery, but not during the last twelve hours, as some retention of the fluid will occur. If enemas are given earlier, the effects of Sulfathaladine will be diminished. Two doses of paregoric, ½ drachm each, are given the afternoon and evening before operation, to put the large bowel at rest.

In the absence of obstruction, a Miller-Abbott tube properly passed will facilitate the operation, and will help to prevent postoperative distention. However, the Miller-

Abbott tube will not relieve malignant obstruction of the large bowel, and valuable time may be lost in an attempt to use this method. Some surgeons use merely a Levin tube placed in the stomach the morning before surgery.

A catheter should be placed in the bladder an hour or so before operation. This is an important detail in patients with left-sided lesions. Postoperatively, the catheter may be connected to a bottle, or released at intervals, to prevent bladder distention caused by pelvic manipulation.

A barbiturate is administered by mouth the evening before operation to insure rest. Preoperative hypodermic medication includes morphine, atropine, and a barbiturate. Spinal anesthesia with Pontocaine, administered either continuously or in a single dose, is the method of choice.

Postoperative management

Blood is given during the operation in amounts necessary to replace that lost. It may be given in the first few hours postoperatively, if indicated.

Gastric suction is started immedately after operation. For three days the patient is given nothing by mouth, and at least 3,000 cc. of glucose daily by vein is necessary for maintenance of nutrition. Parenteral proteins may be indicated in depleted patients. Vitamins in large doses should be given with the fluids, and the administration of salt is kept at a minimum, to prevent edema.

On the fourth day the gastric suction is discontinued, and oral feedings of fruit juices are started. Feedings are gradually increased, until a full diet is being given before discharge. Early ambulation is most important. It is desirable for the patient to be walking on the third postoperative day.

If signs of shock develop, oxygen should be given by nasal catheter. This treatment also helps to decrease abdominal distention. Morphine should be given in doses adequate to control pain.

Surgical procedures employed

For anorectal and rectosigmoidal cancer, we have used the one-stage Miles abdominal-perineal resection with left inguinal colostomy. Some surgeons prefer midline colostomy through the original incision. Lately we have been closing the posterior wound almost completely. If this is done, the wound should be irrigated with saline beginning on the third postoperative day. We have had no experience with any "pull through" (sphincter saving) operation in the treatment of cancer of the rectum and rectosigmoid, although Bacon[10] thinks that this is the ideal method of treatment if the lower border of the growth is 6 cm. above the anal margin.

Wangensteen[11] has applied primary resection and anastomosis to rectal ampullary lesions, but instances of leakage and infection at the site of the anastomosis have been recorded. It is questionable whether this procedure removes an adequate amount of perirectal lymphatic tissue. MacFee[12] points out that the absence of a serosal covering of the rectum below the peritoneal reflection makes healing less dependable. The perirectal tissues are highly susceptible to infection. If such a procedure is used, the perirectal space should be drained either suprapubicly or perineally, with or without coccygeal removal.

For lesions of the descending colon and sigmoid, we prefer primary resection with open end-to-end anastomosis, and without a complementary drainage operation. In cases of complete obstruction, one is forced to do either a preliminary cecostomy or a transverse colostomy. We use a continuous no. 00 chromic gut suture for the mucosal layer, and interrupted no. 60 cotton sutures for the serosal layer. Meyer uses interrupted sutures throughout. We have no objection to silk sutures, but in our hands wire (advocated by Babcock) is more difficult to handle.

Lesions of the splenic flexure frequently cause obstruction. Usually the diagnosis is delayed until fixation is present, and the approach is difficult. When it is feasible, we prefer primary resection with end-to-end suture after adequate mobilization. One has to guard against encroachment on the blood supply in dealing with lesions in this location.

Lesions of the transverse colon are suitable for primary resection and end-to-end anastomosis, if an adequate blood supply is insured. The middle colic artery may have to be ligated. In obstructive cases, it is us-

10. Bacon, H. E.: Anus, Rectum, Sigmoid Colon: Diagnosis and Treatment. Philadelphia, J. B. Lippincott Co., 1945.
11. Wangensteen, O. H.: Primary Resection (Closed Anastomosis) of Rectal Ampulla for Malignancy with Preservation of Sphincteric Function Together with a Further Account of Primary Resection of the Colon and Rectosigmoid and a Note on Excision of Hepatic Metastases. Surg., Gynec. & Obst. 81:1-24 (July) 1945.
12. MacFee, W. F.: Management of Carcinoma in Several Parts of the Colon, Ann. Surg. 126:125-139 (Aug.) 1947.

ually necessary to do a preliminary cecostomy, followed later by resection with end-to-end suture of the bowel.

Lesions of the cecum, ascending colon, and hepatic flexure are ideal for primary resection and anastomosis. The anastomosis may be end to end, end to side, or side to side. The end-to-end procedure is the most desirable physiologically, and has become more popular lately. The presence of any of these lesions is an indication for resection of the terminal ileum, cecum, ascending colon, and proximal transverse colon, because the blood supply is not dependable or constant. The lumen of the ileum is made equal to that of the colon by oblique section, or by splitting the ileum for a short distance along its antimesenteric border. A side-to-side anastomosis is probably safer where the blood supply is doubtful.

Where obstruction exists, it is best to do side-to-side ileocolostomy with mesenteric closure. Resection is reserved for a later operation. When fixation exists, one can do end-to-end ileocolostomy, closing the blind ileal end and reserving resection of the right half of the colon for a later session. It is surprising how the diversion of the fecal stream will eliminate the element of infection and diminish the fixation, making a later operation easier and safer.

We have used the cautery for division of the bowel. Lately, the cold knife is being used more and more without phenolization, as both the cautery and phenol cause tissue necrosis and impairment of blood supply. These factors are of course disastrous in end-to-end anastomosis. When primary resection is done, the anal sphincter should be dilated immediately after operation, and a rectal tube should be used until the patient is passing gas with ease.

Summary

The anatomy, physiology, and pathology of the large intestine have been reviewed, and the problem of differential diagnosis and localization of malignant lesions has been discussed and illustrated by 9 case reports.

Modern preoperative preparation and postoperative management have been discussed, and the surgical procedures employed for cancer in various points along the large intestine have been described.

Constructive, purposeful activity is far better psychotherapy than a playful waste of leisure time.—Ed., Am. Rev. Tbc., Aug., 1947.

PSYCHOSOMATIC HISTORY TAKING

ANGUS C. RANDOLPH, M.D.

WINSTON-SALEM

A problem which is common to all members of the medical profession is that of trying to ascertain some of the problems and emotional difficulties that form the background, if not the main causative factors, of most of the illnesses for which people consult doctors. In this article I shall try to outline some of the ways and means most helpful in arriving at an understanding of neurotic illness.

The Physician's Attitude

The first point to be considered in the approach to patients is the attitude of the doctor himself. If we can accept our patients as persons, and approach them as total personality units, rather than as machines with some functional or structural defect, we can avoid many disappointments and failures. The person who is sick seeks the help of the doctor, not only as one skilled in the care of bodily ailments, but as a fellow human being, from whom he can expect understanding and a genuine personal interest, as well as advice and medication. It is essential that the doctor appreciate the patient's feelings, with regard not only to his aches and pains, but also to his family, his hobbies, his financial situation, his work, his play, his associates, his religion, and his background and past experience. He must understand the man in order to be able properly to diagnose and treat his case.

This approach obviously takes a little extra time, patience, and energy at first, but it is a saving in time, energy, and expense in the long run. The doctor who knows his patient as a person effects more cures, and there is no better advertisement than a satisfied patient.

Allowing the Patient to Talk

When a patient comes to the doctor's office, or is seen in his own home, it is essential that he be made as comfortable as possible, and that the doctor also be attentively relaxed. He should allow the patient to tell of his problem in his own way for the first few minutes, without interruption. During this

From the Department of Neurology and Psychiatry, Bowman Gray School of Medicine of Wake Forest College, Winston-Salem, North Carolina.

time, the doctor can get some idea of the patient's background, training, education, native intelligence, and personality characteristics, by objective observation of his appearance, facial expressions, mannerisms, mood, speech, and the content and organization of his thought patterns. Much can be learned about the patient in this way. With experience, one's ability to categorize personality types can be developed to an amazing degree. From this "sizing up" of the patient, the physician derives clues that form the basis for his questioning as the interview proceeds.

Present Illness

Probably the doctor's first questions revert back to the onset of the present illness, in order to elicit more clearly some of the factors involved—not only the time, circumstance, and nature of the first symptoms, but also the emotional setting, the feelings, events, and relationships that existed just prior to the onset of symptoms. Questions which may be helpful are: "How and when did these symptoms begin?" "What were you doing at the time?" "Did anything happen to upset you at the time?" "Had anything disturbing happened just a short time before, or a day or so before that frightened you or made you mad?"

Quite possibly the patient will ask what all that has to do with the symptoms he complains of. Then the doctor has to take a few minutes out to explain to the patient how emotions can produce symptoms: Embarrassment causes the physical phenomenon of blushing and even, in sensitive people, hives; anxiety over an approaching examination or speech often causes a tight feeling in the abdomen, occasionally accompanied by vomiting or diarrhea; most of us have noticed that when we are excited for one reason or another, we suffer from frequency of urination; also, most people have, at one time or another, become aware of the symptoms of anxiety—palpitation, rapid, shallow respiration, generalized tension, shakiness, excessive sweating, and the tense, tight feeling at the back of the head and neck.

The patient may finally acquiesce in all of this, but still not be convinced that emotions have any relation to his present symptoms. Then it may be necessary to explain in brief how these psychosomatic relationships work. A simple diagram may be drawn to show how an emotion such as fear leads to tension, and this in turn to physiologic and chemical changes in the body; the release of adrenalin causes more rapid beating of the heart and contraction of the smooth muscle of the stomach and intestines, squeezing the blood out into the general circulation, increasing the respiratory rate, and so forth. The patient is told that all these are normal physiologic processes and have served through the ages the very useful purpose of self-preservation through fight, flight, or other activity. Unfortunately, in our civilization, these equally primitive reactions of fight and flight are not generally acceptable, and often the individual does neither. He then becomes aware of the physiologic changes themselves, as symptoms, and these in turn, especially if they become chronic, lead to fear of disease. This secondary emotional response fortifies the original emotional stimulus producing all this physiologic activity, and so the evil cycle is set up.

This type of explanation serves to enhance the patient's understanding of psychosomatic relationships, and to gain his confidence. Usually he will begin spontaneously to relate events that have caused him worry and anxiety, and led to emotional upset. He will then need to be guided and kept in bounds by judicious questioning on the part of the physician. Questions about his domestic, financial and social situation are in order. In this way the physician can obtain a more definite idea of the relationship of some of these problems to the present illness, as either precipitating or contributing factors.

Questions concerning the course of the patient's present illness should be directed toward helping him to express his feelings and thoughts concerning his situation. For instance, the following questions often bring out revealing material: "How has your family responded to your illness?" "How do you feel about this attitude which they seem to have?" "How has it affected your work, and your relationship with others at work?" "Has it caused serious financial straits?" "Has it kept you from indulging in your hobbies and pleasures to the same extent that it has interfered with your work?"

Finally, after the doctor and the patient have obtained a broad over-all picture of his symptoms and their relationship to his environment, it is important to find out what is the patient's feeling about his illness, what it means to him, what he feels the symptoms represent, and what it is that he fears. From the symptoms themselves, or from what the

patient has said thus far, the physician may be led to suspect that he fears cancer, heart trouble, tuberculosis, or some other debilitating, crippling disease. Sometimes the patient may have stated this fear at the outset. In any event, it seems reasonable at this point to determine the origin of this fear: "Did your mother, father, brother, sister, close friend, or other significant figure have this illness with the same symptoms?" "Tell me about this illness and your associations with it. Was this a particularly upsetting experience for you?" (Obviously it was, but the question serves to emphasize this fact to the patient, and to help him relate this earlier experience with his present illness.)

At this point both the doctor and the patient should have a fair understanding of the present illness—not only of the symptoms themselves, but of many of the important causative, contributory, or precipitating factors involved. By this time one should also have some idea of the personality structure of the patient, based on the events he has related, and his emotional responses to them. It is also possible at this time to surmise whether the present illness is of any use to the patient in his efforts to adjust to life. The more obviously neurotic the personality adjustment, the more clearly will this aspect of the illness be seen.

Past History

Attention must now be turned to the constitution and past environmental experiences of the patient. The patient at the present moment is the resultant of everything that has happened to him in the past. It follows, therefore, that the more we know of the forces that have been at work throughout his life, both from within and from without, the better we will be able to understand him, and to deal with his problems. Since we are not all psychiatrists, however, and do not have unlimited time, we have to confine ourselves to a review of some of the high lights. From these we can gain enough appreciation of the total situation to be able to understand and manage our patient and his illness adequately, in most instances. In exceptional cases, recourse can be had to the psychiatrist's specialized training.

Family background

In addition to the usual family history regarding illnesses, racial stock, and occupation of the parents, it is often helpful to get some idea of the general personality characteristics of the family as well. What sort of people were the parents; were they high strung or easy going, friendly and sociable or shy and retiring; were they thrifty, hard working, religious, church going? Most important of all, what was the home atmosphere like; how did the parents get along together, and with others living in the same home?

It is as important to learn something about the attitude of the parents toward having a child, and the patient in particular, as it is to know whether or not there was any difficulty during pregnancy or birth. The attitude of the parents and of other significant figures in the home toward the infant and young child is also as important as data concerning feeding, sleep habits, sitting up, walking, talking, bowel and bladder training, tantrums, nightmares, bedwetting, and so forth.

In practically all cases, except when a constitutional defect is to blame, abnormalities of behavior in infants and children can be attributed to emotional disturbance resulting from faulty interpersonal relationships. More important even than adequate food is adequate love and affection to the infant and young child. It is at this time of life that anxiety begins, and this is the seed from which neurosis grows. Our neurotic mechanisms—we all have them—are the means by which we attempt to deal with our anxiety in making our adjustment to life. Thus, neurotic mechanisms—whether in childhood (excessive temper tantrums, enuresis, nail biting, late thumb sucking, truancy, lying, stealing, and so forth) or in adolescence and adult life (the neurotic use of illness, religion, play, work, or sex, as well as some of the more childlike neurotic manifestations)—are all evidence of basic anxiety.

Therefore our questioning should be directed toward emotional relationships to people and situations, as well as toward actual events in the past history. Questions to the patient should include; "How did you get along with your parents? Were you closer to your mother or to your father? Did they ever punish you unjustly? What would you like to have changed about your parents?" "How did you get along with the other children in your neighborhood?" It is important for the doctor to get some understanding of the feeling relationships of this early formative period.

School years

The next section of our patient's life with which we concern ourselves is the childhood school years—and here again the relationships at home, at school, and at play and work are as important as the age the patient began school, the grades he failed and why, and the sicknesses of the period. How did he get along with his teachers and with other pupils? What studies did he like best? Why did he do poorly in a certain subject? What sports was he interested in? Did he play hookey a lot, and why? Did he learn the facts of life in grade school—and if so, from whom and how? Did he have any sex experiences at this time, and how did he feel about them if he did? Often one finds evidence of conflict with authority well developed by this time. This may shed much light on the present illness, as well as uncover earlier difficulties at home, which were either denied or not appreciated by the patient.

Adolescence and sexual development

The next and probably most dramatically difficult of developmental periods—that of adolescence—offers a wealth of material that may shed light on the present illness. The two main problems, of course, are the adjustment to increasing responsibility and independence, and the adjustment to adult sexual status. Work and play become more serious, and there are new instinctive demands, mainly sexual, that cause untold emotional disturbance. This is the period in which rough plans are mapped out or begun for the future course of the patient's life.

Masturbation usually begins early in this period, and it is important to find out the patient's reaction to this almost universal practice—how it began, the frequency, and the feelings of guilt or anxiety connected with it. It follows naturally to find out the patient's present habits and feelings with regard to this practice. Frequently homosexual relations develop during adolescence, as a single or short lived experience, and these should be looked for. Some time in early, middle, or late adolescence the patient will probably have begun his heterosexual life, and answers to questions concerning these experiences and the emotional responses involved tell much about the patient's personality development. In women the menarche is often a very emotional experience, and the patient should be questioned about it, and also about the menopause if she has reached this stage of life.

The patient's sexual experience from adolescence until the present should be ascertained in rough outline. With all this will come out the general social development of the individual—his relationship to other boys and girls, young men and young women. The problem of relationship to parental authority—the conflict between dependence and independence—will probably have to be brought out by a few pertinent questions. Questions concerning the parents' attitude toward the patient during adolescence, and about his feelings toward the parental curb on his liberty and toward advice and counsel from them give specific information that not only helps the doctor to understand the patient, but also helps the patient to understand himself, which is one of the chief aims of therapy.

Work history

Attention is next directed to the various aspects of the patient's work career—not only the different jobs he has had, the salary earned, and the type and character of the work, but, most important, his relationships with the job and on the job. It is important to know how he has liked his work; how he has gotten along with the boss, the foreman, and his fellow workers on the different jobs he has had; and whether he has been fired from any jobs, or has quit any jobs, and why. These relationships illustrate, often more graphically than any other, the character of the individual.

Domestic situation

Before delving into the important subject of the patient's marital life, it is helpful to learn some of the details of the courtship that preceded marriage—especially some of the emotional reactions and attitudes toward the prospective partner in life, and toward the institution of marriage itself. Attitudes toward sexual relations before and after marriage, and the attitudes of both parties toward having children and toward the responsibilities of parenthood are especially important. If the emotional relationships between the patient and his partner, and between the parents and children have not already been elicited earlier in the history, they should be inquired into at this point. Even if some of this material was obtained earlier in the interview, it is often valuable to note the additional response at this time, because of the improved rapport between

doctor and patient, and also because the patient has warmed to his subject.

Past illnesses

At this stage, if the patient's illnesses have not been thoroughly reviewed earlier in the course of the interview, or at previous interviews, it is well to get at least an outline of them. They are usually mentioned during the course of the interview more or less chronologically, and it is partly for this reason and partly because of the effort to de-emphasize the physical aspect and enhance the emotional aspect in the patient's understanding that the review of systems and of past illnesses does not follow immediately the questions about the present illness. The patient's attitude toward his past medical history will be noticeably different at this stage of the interview.

Hobbies and Religion

It is helpful to inquire briefly into the hobbies and interests of the patient; his participation in sports, gardening, collecting, chess, cards, music, art, literature, clubs and societies; and the relationships involved.

Finally comes the question of religion and the beliefs which the patient professes. Most people are brought up in some church or other, with simple and often vague teachings about God, Christ, and the Church, felt to be fit for children's consumption. Then as they get into middle or late adolescence, these teachings fail to solve their problems, their childish faith is shattered, and they drift for a time in a sea of revolt. Finally, most of them again reach *terra firma* with some sort of faith that they work out for themselves on a more mature level. It is helpful and revealing in the study of the patient's total personality to follow through in retrospect this pilgrim's progress of his, and to evaluate, insofar as we are able, the soundness of his religion and his way of life. It is here that we often come closest to the core of the individual.

Conclusion

Many physicians will feel that they do not have time to go into this extensive investigation of their patient's personality. I can readily understand this attitude, but I do feel that a few minutes extra devoted to each patient, with this attitude and feeling and this kind of approach, will not only be a time saver in the long run, but will be profitable to both the doctor and the patient in other ways as well.

Psychiatrists, general practitioners, and physicians in other specialties should strive to understand their patient as a person. They should appreciate him as a human being, with feelings, thoughts, and emotions as well as anatomic, physiologic, biochemical and pathologic features. I cannot urge too strongly a closer relationship of all the specialties in the common meeting ground of psychosomatic medicine. It is not a specialty, and should not be. It is the philosophy of medicine itself.

IMPROVED AUTOTRANSFUSION

ADDISON G. BRENIZER, JR., M.D.*
CHARLOTTE

The purpose of this paper is to re-emphasize the value and safety of the well known but often neglected procedure of autotransfusion, and to describe a simple collection apparatus which can be rapidly assembled from standard equipment. Since traumatic and vascular surgery presents many opportunities for autotransfusion, surgeons who handle emergency services should be familiar with an efficient, yet simple, apparatus, and be prepared to use it.

Far from new, the idea of autotransfusion was conceived and reported by Highmore[1] in 1874. John Duncan[2] is credited with performing the first autotransfusion; in 1885 he reinfused 3 ounces of blood recovered during a thigh amputation. In 1914 Thies[3], a German surgeon, first reported the use of intraperitoneal blood in cases of hemorrhage from ruptured ectopic pregnancies. By 1936 the Watsons[4] were able to collect 275 instances of autotransfusion from the American literature alone. In 1943 Griswold and Ortner[5] reported their ten year experience with 100 autotransfusions performed in a single clinic. Some gynecologic clinics now use the procedure routinely[6], and no doubt

* Diplomate of the American Board of Surgery and formerly a major in the Medical Corps of the Army of the United States.

1. Highmore, W.: Practical Remarks on an Overlooked Source of Blood Supply for Transfusion in Postpartum Haemorrhage, Suggested by a Recent Fatal Case. Lancet 1:89 (Jan. 17) 1874.
2. Duncan, J.: Reinfusion of Blood in Primary and Other Amputations. Brit. Med. J. 1:192, 1886.
3. Thies, J.: Für Behandlung der Extrauterin Gravidetät. Zentralbl. f. Gynäk. 38:1191, 1914.
4. Watson, C. M. and Watson, J. R.: Autotransfusion: Review of American Literature with Report of Two Additional Cases. Am. J. Surg. 33:232-237 (Aug.) 1936.
5. Griswold, R. A. and Ortner, A. B.: The Use of Autotransfusion in Surgery of the Serous Cavities. Surg., Gynec., & Obst. 77:167-177 (Aug.) 1943.
6. Wallingford, A. J.: Auto Transfusion in Ectopic Pregnancy. New York State J. Med. 37:1922-26 (Nov. 15) 1937.

autotransfusion is employed in many isolated, unreported instances. The report of Griswold is excellent proof that cases suited for autotransfusion are seen frequently in hospitals with an emergency, traumatic service[7].

Since blood and such substitutes as plasma and concentrated albumin have become more readily available through donation centers and storage facilities, autotransfusion has become a neglected procedure. It is not possible to estimate the number of cases in which its use might have been a valuable adjunct in treatment, but it is obvious that many did not receive autotransfusions because the attending personnel were not prepared to use the procedure when the emergency presented itself.

Value of Autotransfusions

It is clear from the accumulated experience of front-line surgery in World War II that hemorrhage and irreversible shock were by far the greatest causes of mortality in our battle casualties. It has also been shown that the mortality from hemorrhage is directly proportional to the extent of the blood loss[8]. Since *early* replacement of blood loss is the ideal treatment of exsanguination, and *adequate* replacement of blood in shock is the best prophylaxis against irreversible shock, the rationale for prompt autotransfusion is clear.

The real value of autotransfusion in the treatment of shock is based upon the oft-emphasized time conservation factor. In many traumatic cases the time elapsing between injury and hospitalization is excessive. It is, therefore, essential that every possible precaution be taken to eliminate delay in replacing blood loss after the admission of patients who are bleeding or are in shock. The time saved by transfusing autogenous blood (aseptically collected, filtered, and citrated) may amount to as much as forty to fifty minutes, even in a hospital with its own blood bank. A good deal more time is consumed if donors must be used.

This delay in obtaining blood which has been properly matched (for the Rh factor, as well as for type) is unavoidable, because the high mortality from incompatibility reactions and the danger of sensitizing an Rh-negative recipient to future transfusions prohibit the use of unmatched blood. Even though plasma may be used as a temporary expedient, it is not adequate replacement therapy for *whole* blood loss; and the incidence of homologous serum hepatitis after the use of pooled plasma has caused many doctors to abandon its use entirely.

Even when the time factor is not urgent, autotransfusion may be necessary to supplement bank blood in cases of a shortage of one of the rarer blood groups. Finally, autotransfusion is a last defense against irreversible shock when one is forced to operate on a patient who does not respond to the usual supportive preoperative measures.

The cases in which autotransfusion may be useful are those instances of rapid bleeding into the serous-lined cavities whence fluid, sterile, nonhemolyzed blood may be collected. The classic examples are acute hemopericardium and hemothorax due to wounds of the heart[9] and lungs, and hemoperitoneum due to ruptured spleen or ectopic pregnancy. Blood drained from large benign tumors such as uterine fibroids has been successfully utilized[10]. In addition to its value in traumatic cases, autotransfusion may be useful—even life saving—when accidents occur during elective operations on the heart or the larger blood vessels, and in operations for aneurysm or arteriovenous fistulas. The first consideration, however, is to be prepared to collect and transfuse autogenous blood.

Safety of Autotransfusion

The safety of autotransfusion is affirmed by the reports of the Watsons[4] and Griswold[5]. The former found a non-fatal reaction rate of about 3 per cent and a mortality of 1.5 per cent. These fatalities would be preventable in light of our present knowledge concerning the extent of hemolysis in blood more than sixteen hours old. Griswold also had a reaction rate of 3 per cent, including 1 fatality (1 per cent mortality) which was the result of a technical error in filtration.

7. In 1947 at Tilton General Hospital 7 cases were encountered in which autotransfusion might have been employed. In 1 case death occurred before *any* treatment could be instituted. In 4 instances (2 ruptured spleens, 1 ruptured ovarian cyst, and 1 lacerated liver) adequate amounts of bank blood were available, and autotransfusion was not used because of possible hemolysis or bile contamination. In the 2 remaining cases—a ruptured spleen and a lacerated lung—autotransfusions of more than 1300 cc. were employed in each instance without reaction and with dramatic improvement.

8. Hamilton, J. E. and Duncan, E.: Penetrating Gunshot and Stab Wounds of the Abdomen, Surgery 13:107-121 (Jan.) 1943.

9. Watson, C. M. and Watson, J. R.: Autotransfusion in the Treatment of Wounds of the Heart, J.A.M.A. 106: 520-523 (Feb. 15) 1936.

10. Wallingford, A. J.: Auto Transfusion with Blood from Large Myomatous Uteri, Am. J. Obst & Gynec. 33:869-874 (May) 1937.

Even though blood which is partly hemolyzed or contaminated with urine, intestinal contents, bile, or necrotic tissue is generally considered unfit for autotransfusion, the experience of Griswold is interesting. He and his co-workers found no evidence of toxins from tissue necrosis *per se*, and no harmful properties in portal blood or blood containing small amounts of urine. Though recognizing the toxic properties of bile, they found that its presence in small amounts was no contraindication to autotransfusion. In fact, they gave contaminated, but filtered, blood to 29 patients; 8 of these survived their trauma and shock long enough for a determination of the role played by autotransfusion. None of the 8 survivors had septicemia or other notable reactions.

If carefully filtered and used in conjunction with massive doses of the antibiotics, such contaminated blood may well be harmless; and the necessity for adequate blood replacement may outweigh the danger of its use. Griswold also reiterates the common belief that alkalinizing the urine can reduce the renal precipitation of hemoglobin when the autogenous blood is beginning to show hemolysis.

Methods of Autotransfusion

Rapid recovery of the maximum amount of uncontaminated, fluid blood into a container adapted to rapid reinfusion is the object of all collection methods. A number of good methods have already been described. Levy[11] reported mopping out blood with packs previously wet with citrate solution. The blood-soaked packs are then wrung into a saline-citrate solution which is filtered through gauze and then poured into an open gravity dispenser. The methods of Wallingford[3] and Griswold[5] utilize suction through a trap bottle, followed by open filtration through gauze. The apparatus described by Cornell[12] and Greene[13] also make use of suction and the Poole tip, but have added attachments for closed filtration. Greene employed a specially designed double wire filter of fine mesh, whereas the filter of Cornell was constructed of gauze.

In general, it may be said that sponging or ladling methods of collection are less efficient and more apt to result in contamination, hemolysis, or clotting of the blood. Open methods of collection and filtration through gauze may result in bacterial contamination or the acquisition of pyrogenic properties. The closed methods mentioned above require specially designed bottles or filters, and are not readily adapted to handling large volumes of blood.

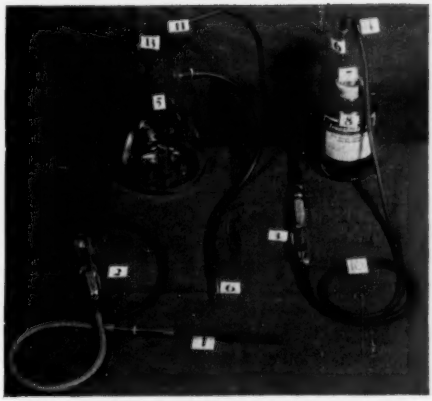


Fig. 1. The assembled apparatus for closed autotransfusion. Stock numbers in parentheses refer to the Army-Navy catalogue.

1. **Tube, suction, abdominal, Poole (3-866-600)**
2 and 3. **Filter, drip, apparatus, indirect blood transfusion (3-305-900)**
4. **Clamp, shutoff, regulating (4-180-680)**
5. **Flask, filtering, 1000 ml. (4-249-000)**
6. **Adapter, Luer needle, glass (3-000-700)**
7. **Needle, hypodermic, 15 gauge (3-491-305 or 3-491-400)**
8. **Bottle, vacuum, blood with or without anticoagulant (3-119-730, 3-119-750, 3-119-760 or 3-119-765)**
10. **Tubing, rubber, ⅜ inch inside diameter (4-461-420)**
11. **Tubing, glass, soft, assorted, 25s. (4-459-250)**
13. **Stopper, rubber, 2-hole no. 7 (4-422-000)**

All of the apparatus except the vacuum bottle should be sterile, so that it can be handled on the operating table. Spare tubing and filter sets (as prepared for indirect transfusion) should be available. Vacuum bottles (sterile inside) and the drip-regulating clamp are handled exclusively by unscrubbed circulating assistants or by the anesthetist.

Description of Apparatus

The apparatus described below and illustrated in figure 1 employs no new principle, but has been found efficient and convenient, and can be rapidly assembled from items available in any adequately equipped hospital. In the author's opinion it offers the following desirable features:

1. Closed, aseptic, uninterrupted collection of blood.

11. Levy, L.: Autotransfusion: Report of Three Cases, New Orleans M. & S. J. 83:886-889 (June) 1931.
12. Cornell, N. W.: Auto Blood Transfusion Apparatus, Am. J. Surg. 22:568-569 (Dec.) 1933.
13. Greene, J. J.: Greene Auto-Transfusion Apparatus Used in Aseptic Hemoperitoneum, Am. J. Surg. 30:558 (Dec.) 1935.

2. Closed double filtration through fine wire mesh.
3. Transfer of blood to the recipient at any stage of collection.
4. Aseptic transfer of blood from the collection flask to the donor bottle—even by an unscrubbed circulating assistant.
5. Repeated transfer of blood from the collection bottle to any number of donor bottles.
6. Rapid replacement of filters or tubing in case of clogging.

The apparatus is set up in the following manner: A one liter suction flask, fitted with a two-hole no. 7 stopper, is introduced into the ordinary operating room suction circuit at a convenient distance (2½ to 3 feet) from the Poole suction tip. This permits intermittent collection of blood from an open space without loss of vacuum in the sterile donor bottles. A "Baxter filter" (wire mesh) lies between the suction tip and the short right-angled glass tube leading into the flask. The long right-angled glass tube, which reaches to within one eighth inch of the flask's bottom, is attached by sterile rubber intravenous tubing (the tubing from an ordinary blood recipient set) to a second Baxter filter, which leads by way of an adapter and a no. 15 needle into a sterile vacuum donor bottle.

These vacuum bottles are available with and without anticoagulants. When blood is collected from an open cavity and citrated in the collecting flask, the vacuum donor bottle should contain no additional anticoagulant. Bottles with anticoagulant are desirable when blood is being removed by thoracentesis.

Loss of vacuum in the donor bottle is prevented by the application of a drip-regulating clamp. The side opening of the collecting flask is connected to the usual source of negative pressure. Before blood collection is begun, a measured amount of citrate solution is aspirated through the system into the suction or collecting flask. The apparatus is then ready to aspirate, filter, and citrate any accessible free blood.

As soon as blood is collected in the suction flask, a circulating technician or nurse at some distance from the operating table can begin to draw blood through the second filter into the donor bottle by releasing the drip-regulating clamp. If more than 500 cc. is recovered in the collecting flask, additional vacuum bottles can be aseptically hooked into the system, and autotransfusion can be begun immediately. Spare filters and suction tips should be ready for replacement in case of clogging. If the blood is transfused through the usual recipient set, it is then filtered a third time.

Adaptation for thoracentesis

The filter, tubing, and vacuum donor bottle are readily adapted for collecting blood by thoracentesis. The thoracentesis needle is connected through a three-way stopcock to a 30 cc. syringe, and by a filter and tubing to a vacuum donor bottle. When the valve is turned to empty the syringe, blood is rapidly drawn through the filter into the donor bottle, where it is citrated. The shut-off position of the stopcock enables one to exchange a sticking syringe or to discard air without producing pneumothorax or losing vacuum in the donor bottle.

In 1945 Sanger[14] reported the successful use of the ordinary transfusion vacuum bottle, tubing, and needle for recovering blood directly by thoracentesis in the treatment of war wounds of the chest. Probably for convenience, he did not use a syringe, stopcock, or filter. Even though a traumatic hemothorax *may* remain unclotted, the writer feels that the use of a filter is a warranted precaution. The use of an aspirating syringe and three-way stopcock provides two advantages: (1) It prevents contamination of the vacuum bottle if the first sample of blood is contaminated or hemolyzed, and (2) it prevents loss of vacuum in the bottle if a large pneumothorax is present.

Summary

1. Autotransfusion is a well established method of treatment in selected cases of hemorrhage into the serous-lined body cavities.

2. The real value of the procedure lies in conserving time and supplementing stores of bank blood.

3. Fresh autogenous blood, properly collected, citrated, and filtered, is a safe therapeutic agent.

4. Autotransfusion is often omitted because the hospital staff is unprepared to use it.

5. A simple, efficient collection apparatus made from standard items is described.

14. Sanger, P. W.: Evacuation Hospital Experiences with War Wounds and Injuries of the Chest, Ann. Surg. 122: 147-162 (Aug.) 1945.

SICKLE CELL ANEMIA COMPLICATED BY VALVULAR HEART DISEASE

GUS E. FORBES, M.D.*

LAURINBURG

Herrick[1] in 1910 described a disease manifested by severe anemia and characterized by peculiar elongated and sickle-shaped red blood corpuscles. Since that time many articles dealing with sickle cell anemia have appeared in the literature. The clinical features of this disease are similar to those of rheumatic fever, and the differential diagnosis in many instances is not an easy task. Joint pains, fever, tachycardia, cardiac enlargement, heart murmur, and electrocardiographic changes may occur in either condition. The occurrence of the two diseases in the same patient appears to be extremely rare, for a review of the literature reveals only 4 cases of sickle cell anemia in which valvular defects due to rheumatic fever were found at autopsy.

It is important to recognize the existence of rheumatic heart disease when it is present in patients with sickle cell anemia, for the prognosis of either disease may be altered by the presence of the other. The purpose of this paper is to emphasize the fact that valvular defects due to rheumatic fever may occur in patients with sickle cell anemia, and to discuss the features which suggest a clinical diagnosis of the two diseases in the same patient.

Case Report

The following is the case report of a 28 year old Negro man in whom the diagnosis of sickle cell anemia and mitral valve disease was made clinically and verified by autopsy findings.

First admission

This 28 year old colored man was admitted to the Hospital Division of the Medical College of Virginia on July 21, 1947, complaining of weakness, breathlessness, and pain over the heart. He stated that all of his life he had had episodes of weakness lasting from a few days to a few weeks; he could not describe these episodes more accurately. He said also that he had not been as active as other children of his age, that he did not advance in school as rapidly, and that he had always been underweight. There were no other specific complaints until the age of 18 years, when he began to have frequent sore throats, as often as once a month. These episodes usually resulted in his going to bed for several days. At the age of 23 years exertional dyspnea appeared, and became progressive. Later he began to have frequent nosebleeds for which there was no apparent cause.

Three months prior to admission he was forced to stop work because of swelling in both legs, increasing breathlessness, and the development of ulcers on the medial and lateral surfaces of the left ankle. These ulcers disappeared but recurred just prior to hospitalization. About one month before he entered the hospital, precordial pain appeared. This was described as sharp and constant, later becoming a dull ache. The dyspnea increased and he was forced to remain in bed. Two or three weeks before admission pain, heat, and swelling developed in the right knee, the elbows, and the shoulders. These symptoms disappeared in about one week, and there was no history of previous joint manifestations. Weakness and breathlessness increased, and the patient was referred to the hospital for treatment. There was no history of chills, fever, nausea, vomiting, or known jaundice.

At the age of 21 years the patient had received several injections because of a positive serologic test for syphilis. Tuberculosis had been suspected for many years, but a positive diagnosis had not been made. There was no history of significant familial disease. The patient was born near Richmond, Virginia, and had always lived in the same vicinity. He had not been a member of the armed services.

Physical examination: The rectal temperature was 102 F. the pulse 92, respiration 20, blood pressure 115 systolic, 55 diastolic, weight 126 pounds. The patient was a mildly dyspneic colored male who appeared chronically ill, malnourished, and younger than his stated age. There was slight distention of the neck veins. The buccal mucous membranes, the conjunctivae, and the palms of the hands were pale and an icteric tint was present in the sclerae and mucous membranes. The cervical and axillary lymph nodes were palpable. The tonsils were hypertrophied but showed no evidence of active infection.

The heart was enlarged to the left, the apex being palpated in the fifth left intercostal space in the anterior axillary line. A diastolic thrill was present and there was a high-pitched systolic murmur heard best at the apex, and preceded by a low-pitched, rumbling diastolic murmur; these murmurs were increased by exercise. Moist rales were present in both lung bases. The abdomen was slightly distended. The liver could not be palpated, but was thought to be enlarged to percussion; the spleen was not palpable. There was slight bilateral pitting edema of the lower extremities, and small ulcers were present on the medial and lateral sides of the left ankle. The remainder of the physical examination was not remarkable.

Laboratory data: The blood count showed 1,965,000 red blood cells, 6 Gm. of hemoglobin, and 12,150 white blood cells, with 66 per cent polymorphonuclear cells, 24 per cent lymphocytes, 8 per cent eosinophils, and 2 per cent monocytes. Urinalysis showed an acid reaction, a specific gravity of 1.014, and a trace of albumin; microscopic examination showed an occasional white blood cell per high power field. The icteric index was 22 units, and the total serum proteins were 7.4 Gm. per 100 cc., with an albumin-globulin ratio of 1:2. Serologic tests for syphilis were negative, and the blood sugar and nonprotein nitrogen were normal. A sickle cell preparation showed 100 per cent sickling in six hours, and the sedimentation rate, determined by the Cutler method, was 36 mm. in an hour.

A chest film showed slight increase in the bronchovascular markings, with slight haziness in the left

From the Department of Medicine, Scotland County Memorial Hospital, Laurinburg, North Carolina.

* Former Medical Resident and Instructor in Medicine, Hospital of the Medical College of Virginia, Richmond, Virginia.

1. Herrick, J. B.: Peculiar Elongated and Sickle Shaped Red Blood Corpuscles in a Case of Severe Anemia, Arch. Int. Med. 6:517-521 (Nov.) 1910.

costophrenic angle. Fluoroscopy showed moderate enlargement of the heart; a barium swallow with the patient in the right anterior oblique position revealed the esophagus to be displaced posteriorly. The electrocardiogram revealed a regular rate of 83 per minute, a PR interval of .14 second, and a QS interval of .06 second; it was normal otherwise. Roentgen examination of the skull and long bones showed trabeculation of the cortex of the left tibia.

Numerous stool examinations were negative for ova and parasites. Agglutination tests for typhoid O and H, paratyphoid, proteus X_{19}, and brucellosis were negative, as were complement fixation tests for echinococcosis and trichinosis. Serial roentgenograms of the chest revealed no evidence of Loeffler's syndrome. A biopsy of the gastrocnemius muscle showed no evidence of trichinosis or periarteritis nodosa, and biopsy of a left axillary lymph node showed only reactive hyperplasia with extensive infiltration by eosinophils.

Course in the hospital: The patient's blood was type O, Rh positive, and on July 24, 1947, he was given a transfusion of 250 cc. of whole blood; this was repeated the next day. On August 1, 1947, a blood count was as follows: red blood cells 1,580,000, hemoglobin 4.9 Gm., white blood cells 19,600, with 47 per cent polymorphonuclear cells, 19 per cent lymphocytes, 2 per cent monocytes, and 32 per cent eosinophils. A smear of peripheral blood showed marked poikilocytosis and anisocytosis, with many sickle cells; there was a moderate amount of red cell regeneration with normal appearing platelets, and a marked increase in normal mature eosinophils was noted. A sternal marrow examination revealed hyperplasia of erythropoiesis, with frequent proerythroblasts, a great increase in normal appearing eosinophils, and a slight increase in megakaryocytes.

By August 10, 1947, the patient had received 1550 cc. of type O, Rh positive blood, and the red blood cells had increased to 2,820,000, with 9.2 Gm. of hemoglobin. The white blood cells, however, had increased to 63,150, with 82 per cent eosinophils. Transfusions were discontinued. By August 16, 1947, the leukocyte count was 87,300, with 77 per cent eosinophils. Smears of the peripheral blood and sternal marrow showed no essential change.

Clinically, the patient appeared to improve greatly. The chest pain and breathlessness disappeared; he became ambulatory, and the leg ulcers healed. The oral temperature ranged between 98.6 and 100 F. An electrocardiogram showed no essential change; the PR interval was .16 second. Serial chest x-rays revealed very slight reduction in the heart size; slight pulmonary congestion remained. The total leukocyte count decreased gradually, but the eosinophilia persisted. No significant change in the cardiac murmurs was noted. The patient was discharged on September 22, 1947, to be followed in the Outpatient Clinic.

Second admission

The patient was readmitted at 6 p.m. on October 1, 1947. Following discharge, he had begun to have pain in the epigastrium, with increasing abdominal distention and breathlessness. This was followed by swelling of both legs, orthopnea, and weakness.

On admission the patient appeared acutely ill, and extreme orthopnea was present; he was jaundiced and pale. Bilateral pitting edema of the lower extremities and marked distention of the neck veins were present. The liver was palpated at the level of the umbilicus, and was tender and firm. The heart was enlarged, the point of maximum intensity being in the fifth left intercostal space in the anterior axillary line; a diastolic thrill was present, and systolic and diastolic murmurs were heard over the apex. There was evidence of fluid in the right pleural cavity.

A blood count showed 1,380,000 red blood cells, 4 Gm. of hemoglobin, and 51,000 white blood cells, with 56 per cent polymorphonuclear cells, 35 per cent lymphocytes, and 9 per cent monocytes; no eosinophils were found. The reticulocyte count was 18 per cent. Urinalysis revealed an acid reaction to litmus paper, a specific gravity of 1.011, a trace of albumin, and a positive reaction for bile. The icteric index was 156 units, and the nonprotein nitrogen was 57 mg. per 100 cc. of blood. A roentgenogram of the chest showed generalized pulmonary congestion, with a small amount of fluid in the right pleural cavity, and cardiac enlargement.

The patient was placed in an oxygen tent, and was given 250 cc. of type O, Rh positive blood. The next morning he received a second transfusion of the same amount. In addition he was given an initial dose of 1.2 mg. of digitoxin by mouth, followed by 0.2 mg. daily. Ammonium chloride and intravenous Salyrgan were used as diuretics. Daily transfusions of 250 cc. of blood were continued, and by October 7, 1947, 1500 cc. had been given. A chest x-ray showed a little less density and slight reduction in the pulmonary congestion, but the right pleural effusion and cardiac enlargement remained. Aspiration of the right pleural cavity resulted in the removal of 430 cc. of dark amber fluid with a specific gravity of 1.016. Blood cultures were negative. The electrocardiogram revealed a rate of 95 per minute, and a PR interval of .24 to .26 second. A prominent S wave was present in leads I and II; the QRS in lead III was W-shaped; and the T wave in lead IV was diphasic.

The patient improved gradually, and became ambulatory on October 20, 1947. The icteric index returned to 28 units. On October 25, 1947, he was discharged to be followed in the Outpatient Clinic. The cardiac murmurs were present and had not changed in character.

Third admission

Following discharge the patient had no complaints until November 3, 1947, when weakness, swelling of the abdomen, and increasing breathlessness appeared. He was readmitted at 7 p.m. on November 6, 1947.

The patient was slightly jaundiced and the neck veins were distended. The left side of the chest was clear, but on the right there was suppression of breath sounds, with decreased tactile fremitus and dullness to percussion at the level of the eighth intercostal space in the anterior axillary line. An occasional premature contraction of the heart was present, and systolic and diastolic murmurs were heard over the apex. The abdomen was distended and a fluid wave was present. The liver was markedly enlarged and there was bilateral pitting edema of the legs.

The blood count showed the presence of severe anemia and slight leukocytosis; the differential count was normal. Urinalysis was as on previous examinations. The icteric index was 40 units, and the nonprotein nitrogen was 35 mg. per 100 cc. of blood. A roentgenogram of the chest showed moderate cardiac enlargement, with congestion throughout both lungs. The cardiac-thoracic ratio was 64 per cent. Fluoroscopy with a barium swallow showed prominence of the left auricle and ventricle. A lateral film (fig. 1) showed the esophagus to be deviated posteriorly by the enlarged left auricle. The electrocardiogram revealed a rate of 100 per minute, and a PR interval of .18 second. Lead I showed a small Q, deep S, and diphasic T; lead II a deep S; and lead III a low R and deep S. Several blood cultures were negative.

The patient was treated by the usual methods for cardiac decompensation, and in addition two transfusions of whole blood (500 cc. each) were given. He

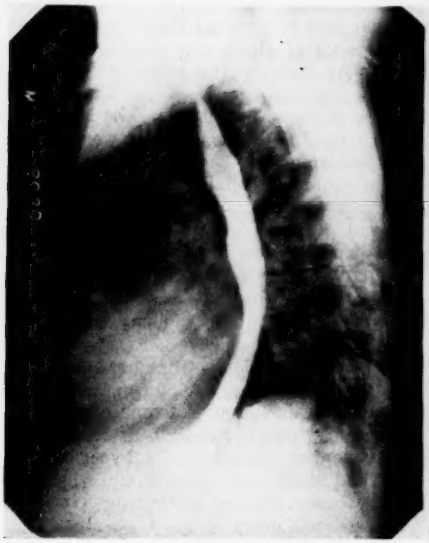


Fig. 1. Lateral view of the chest, demonstrating the barium filled esophagus deviated posteriorly by the enlarged left auricle.

Fig. 2. The heart at autopsy, demonstrating fibrous thickening of the anterior and posterior leaves of the mitral valve. The arrow points to an area of nonbacterial thrombotic endocarditis.

improved, and was discharged on November 20, 1947. The red blood cell count was 3,480,000; there were 9 Gm. of hemoglobin, and the white blood cell count was 8,400, with a normal differential count. The icteric index was 26 units. The heart murmurs were present, and the liver, although reduced in size, was palpable. The spleen was not palpable.

Fourth admission

The patient was readmitted at 8:30 p.m. on December 10, 1947, with complaints of breathlessness, swelling of the lower extremities, and weakness. He was in marked congestive heart failure, with distended neck veins, an enlarged, tender liver, pulmonary congestion, and pitting edema of the lower extremities. The heart was enlarged, the point of maximum intensity being felt in the sixth left intercostal space. Systolic and diastolic murmurs were present over the apex. The spleen was not palpable, and the patient was moderately jaundiced.

The red blood cell count was 2,300,000, and the hemoglobin was 5.5 Gm. Bile was present in the urine, and the icteric index was 82 units.

The patient's course was rapidly downhill, and he died approximately twenty-four hours after admission.

Autopsy findings

An autopsy performed by Dr. T. M. Scotti showed congestion in the lungs and abdominal viscera generally. The vessels were packed with red blood cells, and sickled forms were observed in practically all sections. Otherwise, the pertinent findings were limited to the heart, which weighed 610 Gm., and was enlarged in both anteroposterior and lateral dimensions. The epicardium appeared smooth and glistening, and the myocardium was moderately firm. The valves showed the following measurements: tricuspid, 16 cm.; pulmonary, 9 cm.; aortic, 8.5 cm.; mitral, 10.4 cm. Both anterior and posterior leaves of the mitral valve demonstrated fibrous thickening (fig. 2). On the atrial portion three bright yellow, moderately firm granular masses were attached to the edge of the valve. These measured approximately 1.5 to 2 cm. in the widest diameter and could be detached from the valve leaflets, revealing a firm, thick base. Some of the chordae tendineae of the mitral valve were thickened and shortened, and showed loss of web pattern. The tricuspid valve leaflets were slightly thickened. The heart was not remarkable otherwise.

Microscopic description: Hyperemia and slight edema of the myocardium and epicardium were present; the capillaries were packed with red blood cells, and many sickled forms were present in the formalin fixed tissue. Areas of the myocardium showed infiltration by lymphocytes, macrophages, plasma cells, and polymorphonuclear leukocytes. The muscle fibers showed fragmentation, cloudy swelling, and necrosis; one giant cell was noted. No typical Aschoff nodules were seen. The mitral valve showed dense fibrous thickening and prominent vascularization (fig. 3). Superimposed was a thrombotic mass composed chiefly of fibrin; no bacteria were seen.

Anatomic diagnoses: (1) Cardiac hypertrophy and dilatation; (2) healed mitral valvulitis, probably rheumatic; (3) nonbacterial thrombotic endocarditis of the mitral valve; and (4) focal myocarditis.

The transient leukocytosis and eosinophilia which occurred in the case reported here are difficult to explain. The possibility that the reaction resulted from the initial blood transfusion was considered, but attempts to locate the donor were not successful. Eight days following the first transfusion the patient's leukocyte count rose to 19,600, with 32 per cent eosinophils. Twenty-

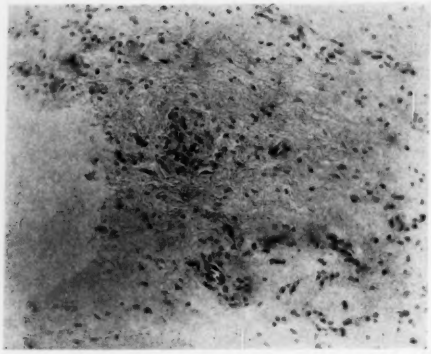


Fig. 3. The mitral valve, showing fibrous thickening, vascularization, and a few mononuclear cells.

four days after the first transfusion the white blood cell count was 87,300, and 77 per cent were eosinophils. The patient was discharged approximately two months after the first transfusion with a leukocyte count of 21,900, and 73 per cent eosinophils. On the second admission eight days following discharge no eosinophils were present, and did not appear in significant numbers following other transfusions. At autopsy the bone marrow showed moderate hyperplasia of all the cellular elements, and the spleen and liver showed no evidence of leukemic infiltration.

Reactions to blood transfusions are not uncommon in patients with sickle cell anemia. The 58 cases studied from the records of the Hospital Division of the Medical College of Virginia represented 104 admissions. There were 241 blood transfusions given, and reactions occurred in ten instances. However, in no instance was there leukocytosis or eosinophilia.

Review of the Literature

Four cases of sickle cell anemia in which valvular defects due to rheumatic fever were found at autopsy have been mentioned in the literature. Steinberg[2] in 1930 studied the autopsy reports on 16 cases of sickle cell anemia, and found evidence of valvular lesions in one case. There was a chronic verrucous endocarditis of the mitral and aortic leaflets, and the myocardium showed mononuclear infiltration and a patchy muscle necrosis. He considered this to be of rheumatic origin. No clinical data were given.

2. Steinberg, B.: Sickle Cell Anemia. Arch. Path. 9:876-897 (April) 1930.

Walker and Murphy[3], in 1941, reported the case of a 12 year old Negro boy in whom a diagnosis of sickle cell anemia had been made. At autopsy the heart weighed 320 Gm.; a fibrinous exudate dulled the anterior surface of the left ventricle. The leaflets of the tricuspid and mitral valves were edematous and thickened, and fresh verrucae as well as subendothelial hemorrhages beaded their lines of closure. Microscopically areas of focal necrosis containing Aschoff bodies were present. The clinical features of this case will be mentioned later.

Stasney[4], in 1943, reported a case of sickle cell anemia and mitral stenosis occurring in a 14 year old boy who died seventy-seven days after admission to the hospital. At autopsy the heart weighed 500 Gm. and showed mitral stenosis. A microscopic examination of the heart was not described. In the same paper mention was made of a 2 year old child who had sickle cell anemia and rheumatic heart disease, but no further description of this case was given.

In addition to these autopsied cases in which sickle cell anemia has been found to be complicated by valvular defects due to rheumatic heart disease, the two diseases have been diagnosed by Halpern and Faber[5] in a living patient who showed sickling with progressive cardiac enlargement and enlargement of the left auricle, demonstrated by backward displacement of the barium-filled esophagus. This patient was still alive at the time of the report.

Diagnostic Features

The occurrence of these two diseases in the same patient appears to be rare, but the recognition of their coexistence is important. Therefore, a study of the literature has been made in an effort to determine clinical features which would justify the diagnosis.

Congestive heart failure

Klinefelter[6] analyzed 12 cases of sickle cell anemia which had been followed for a long period of time, and in which the average duration of the anemia was eleven years. These patients were alive at the time of his

3. Walker, D. W. and Murphy, J. P.: Sickle-Cell Anemia Complicated by Acute Rheumatic Heart Disease and Massive Cerebral Hemorrhage; Report of a Case. J. Pediat. 19:28-37 (July) 1941.
4. Stasney, J.: Erythrophagocytosis and Hemosiderosis in the Liver and Spleen in Sickle Cell Disease. Am. J. Path. 19:225-237 (March) 1943.
5. Halpern, B. C. and Faber, H. K.: The Cardiopathy of Sickle Cell Anemia and Its Differentiation from Rheumatic Carditis. J. Pediat. 30:289-294 (March) 1947.
6. Klinefelter, H. F.: The Heart in Sickle Cell Anemia. Am. J. M. Sc. 203:34-51 (Jan.) 1942.

report. None of them had exhibited frank evidence of congestive heart failure. No patient had dyspnea at rest, nocturnal dyspnea, orthopnea, precordial pain, or chronic cough. Winsor and Burch[7] studied the cardiac status of 25 patients with sickle cell anemia, and of 9 additional cases seen at autopsy, and found no instance of right or left ventricular congestive heart failure or severe orthopnea.

Fifty-eight cases of sickle cell anemia from the records of the Hospital Division of the Medical College of Virginia were reviewed. Of these cases, 3 showed evidence of congestive failure. One was a Negro child who was 9 years old on the first admission. There was no history of rheumatic fever, but a faint apical systolic murmur was heard. The patient was readmitted two years later with symptoms and physical findings of acute congestive failure, and digitalization was required. The heart was enlarged to the left anterior axillary line, and there were systolic and diastolic murmurs at the apex, a gallop rhythm, and a pericardial friction rub. A history of joint pains and fever three weeks prior to admission was obtained. The patient died, but no autopsy was performed. From the clinical evidence, however, it seems most likely that acute pancarditis due to rheumatic fever was present in addition to sickle cell anemia, and that the patient died of congestive heart failure.

The second patient who showed evidence of congestive failure died with chronic glomerulonephritis. Exertional dyspnea was the only manifestation of congestive failure elicited from the history of the third case; this patient was admitted to the hospital because of lobar pneumonia.

The 12 year old Negro boy reported by Walker and Murphy[3] was admitted to the hospital with a chief complaint of fever, nosebleeds, and joint pains. Two weeks prior to admission he became feverish and had a slight hacking cough. One week before admission the right knee became swollen and painful. The right leg, shoulder, and sternoclavicular joint were involved in succession. In addition to pneumonia, there were physical findings which suggested the presence of congestive heart failure. These included pulsating neck veins, a few moist rales heard over both bases, and a palpable liver. The heart was enlarged to the left, with the point of maximum intensity in the sixth intercostal space in the midaxillary line. Systolic and diastolic murmurs were present, and the patient had a repeatedly positive fibrinolysin test.

It would appear, then, that patients with sickle cell anemia do not develop gross congestive heart failure in the absence of complicating disease. When heart failure becomes progressive, irreversible, and advanced to the stage where it is refractory to the usual methods of therapy, and when heart murmurs are present, valvular defects can be diagnosed clinically as a complicating factor. Since rheumatic fever is the most common cause of valvular abnormalities in young individuals, one is justified in making this diagnosis if congestive failure of a severe degree develops. This clinical feature appears to be the most important single characteristic. A history of sore throats, a febrile illness, nosebleeds, and migrating polyarthritis, when obtained, is significant. However, it must be remembered that multiple joint pains may occur in uncomplicated sickle cell anemia.

Sedimentation rate

The sedimentation rate of patients with sickle cell anemia is known to be slow. Bunting[8] observed that sickled red cells from patients with this disease failed to sediment appreciably within an hour. The sedimentation rate was unusually slow in 6 of 10 patients studied by Winsor and Burch[9]. This test was employed in 14 of the 58 cases from the Hospital Division of the Medical College of Virginia. In 7 of these cases the rate by the Cutler method was 15 mm. or less in sixty minutes. Among the 7 patients in whom the reading was above 15 mm. in an hour, an infectious disease was present in 4.

This delay in the sedimentation rate seems to be related to the degree of carbon dioxide saturation of the blood; the higher this saturation, the slower the rate. Inhalation of pure oxygen by the patient accelerates the rate. In active rheumatic heart disease an accelerated sedimentation rate is one of the important diagnostic features; it is used frequently as an index of activity. It would appear, then, that when the sedimentation rate is accelerated in a patient with sickle

7. Winsor, T. and Burch, G. E.: The Electrocardiogram and Cardiac State in Active Sickle-Cell Anemia, Am. Heart J. 29:685-696 (June) 1945.

8. Bunting, H.: Sedimentation Rates of Sickled and Non-Sickled Cells from Patients with Sickle Cell Anemia, Am. J. M. Sc. 198:191-193 (Aug.) 1939.

9. Winsor, T. and Burch, G. E.: The Rate of Sedimentation of Erythrocytes in Sickle Cell Anemia, Arch. Int. Med. 73:41-52 (Jan.) 1944.

cell anemia, an additional disease may be suspected; and if a survey of the clinical findings warrants it, rheumatic fever may be diagnosed.

Fibrinolysin test

A persistently positive fibrinolysin test is also strong evidence for the presence of active rheumatic fever, especially rheumatic carditis. Boisvert[10] has emphasized the importance of this test in children. In sickle cell anemia the test is of no value, but if it becomes positive rheumatic carditis should be considered.

Systolic and diastolic murmurs

Cardiac enlargement and systolic or diastolic murmurs should not be used as criteria for a diagnosis of valvular heart disease in patients with sickle cell anemia. Heart murmurs have been observed in many patients with anemia in whom no valvular lesion was present. Porter[11] found cardiac enlargement with systolic murmurs in many cases of severe hookworm anemia. Klinefelter[6] mentioned 2 cases of chronic hemolytic jaundice with enlarged hearts and systolic and diastolic murmurs, in which autopsy showed cardiac hypertrophy, but normal valves and endocardium. Hamman[12] discussed a case of sickle cell anemia in which systolic and diastolic murmurs were heard; at autopsy the valves were normal. King and Janeway[13] reported the case of a 17 year old Negro girl with sickle cell anemia who had an apical diastolic murmur which gradually disappeared over a period of one year. Ball[14] reported the first case of hypochromic microcytic anemia in which roentgen evidence of cardiac enlargement disappeared after response to treatment. This patient had the physical findings of mitral stenosis, and these disappeared also.

Winsor and Burch[7] found heart murmurs in 95 per cent of 34 patients with sickle cell anemia. A systolic murmur was heard over one valve area in 81 per cent; aortic diastolic and systolic murmurs were present in 5 per cent; mitral diastolic and systolic in 5 per cent; and pulmonic diastolic and systolic in 5 per cent. It is interesting to note that a thrill was present over the mitral area in 5 per cent of the cases. King and Janeway[13] reported the case of a 17 year old Negro girl with sickle cell anemia who had an apical diastolic murmur which gradually disappeared over a period of one year.

Bland, White, and Jones[15] stated that a mitral diastolic murmur heard in patients with cardiac enlargement might be due to a relative mitral stenosis created when the mitral ring does not stretch as much as the left ventricle dilates; this appears to be the explanation for mitral diastolic murmurs heard in cases of sickle cell anemia. Stethograms on 9 of Klinefelter's cases[6] showed a presystolic element at the apex. A low-pitched presystolic sound occurred in a variable degree in all 9 patients.

Systolic and diastolic murmurs occur frequently in patients with sickle cell anemia and other types of anemia; their presence is not conclusive evidence of valvular disease. When such murmurs disappear or when their intensity is decreased following therapy or a remission, the presence of organic valvular defects is less likely.

Cardiac enlargement

Cardiac enlargement occurs also in uncomplicated sickle cell anemia, and should not be taken as evidence of valvular heart disease. Winsor and Burch[7] found some enlargement in 95 per cent of their cases; 91 per cent had left ventricular enlargement, and the right ventricle was enlarged in 86 per cent. Posterior displacement of the esophagus by an enlarged left auricle is a characteristic finding in patients with mitral stenosis. Halpern and Faber[5] demonstrated enlargement of the left auricle by this method in their case. However, this finding does not indicate the presence of mitral stenosis in all cases. In the case which I have reported, the esophagus was displaced posteriorly by an enlarged left auricle which was thought to be the result of mitral stenosis. At autopsy the mitral valve measured 10.4 cm.

Electrocardiographic findings

The electrocardiogram is useful in the diagnosis of many cardiac abnormalities, and a prolonged PR interval is considered a

10. Boisvert, P. L.: (a) The Fibrinolysin Test in Rheumatic Heart Disease; Am. J. Dis. Child. 60:999-1000 (Oct.) 1940. (b) The Fibrinolysin Test in Rheumatic Fever, J. Pediat. 18:357-362 (March) 1941.
11. Porter, W. B.: Heart Changes and Physiologic Adjustment in Hookworm Anemia, Am. Heart J. 13:550-579 (May) 1937.
12. Hamman, L.: Clinical-Pathological Conference; A Case of Severe Anemia with Cardiac Manifestations, South. M. J. 26:665-672 (Aug.) 1933.
13. King, J. T. and Janeway, C. A.: Sickle Cell Anemia with Cardiac Complications, Internat. Clin. 3:41-46 (Sept.) 1937.
14. Ball, D.: Change in Size of Heart in Severe Anemia, with Report of a Case, Am. Heart J. 6:517-521 (April) 1931.
15. Bland, E. F., White, P. D. and Jones, T. D.: The Development of Mitral Stenosis in Young People, Am. Heart J. 10:995-1004 (Dec.) 1935.

characteristic feature of active rheumatic heart disease. However, in the presence of sickle cell anemia this feature has less diagnostic significance. In 1937 King and Janeway[13] described the first case of sickle cell anemia with prolongation of the PR interval. Klinefelter[6] demonstrated this finding in 50 per cent of his cases. Winsor and Burch[7] found that the PR interval surpassed the upper limit of normal in 12 per cent of their cases. Right axis deviation was present in one case.

Electrocardiograms performed in 21 of the 58 cases reviewed from the records of the Hospital Division of the Medical College of Virginia showed that the PR interval was 0.20 second or less in all but one case. In this instance there was no evidence of associated disease, and the PR interval was 0.24 second. In the case reported here the PR interval on the second admission varied between 0.24 and 0.26 second; other electrocardiograms revealed a normal interval.

Right axis deviation, although not frequently found, may occur in patients with sickle cell anemia who do not have valvular defects. Multiple pulmonary infarcts sometimes result from the presence of sickled cells and stasis in the pulmonary vessels. Endarteritis of the pulmonary vessel occurs also, and Winsor and Burch[7] found this condition to be present in over half of their autopsied cases. When either or both of these conditions are present to a sufficient degree, right axis deviation may occur without deformity of the mitral or pulmonic valve.

Sickle cell anemia may produce abnormalities of the electrocardiogram which are similar to those observed in rheumatic fever. Therefore, this procedure, when considered alone, is not definitely diagnostic of either disease.

It appears that the most important clinical characteristic in patients with sickle cell anemia complicated by valvular deformities is congestive heart failure which does not respond to therapy. Cardiac enlargement, systolic and diastolic murmurs, a prolonged PR interval, and right axis deviation may occur in the absence of endocardial abnormalities. Posterior displacement of the esophagus by an enlarged left auricle indicates mitral valve deformity. If the sedimentation rate is accelerated and the fibrinolysin test becomes positive, rheumatic fever should be suspected.

Summary

1. A case of sickle cell anemia and mitral valve deformity, probably rheumatic in origin, has been reported. The combination of these two conditions appears to be rare. Four autopsied cases were found in the literature.

2. A transient leukocytosis and eosinophilia occurred in the case reported. An adequate explanation for this reaction was not found.

3. The clinical features which may lead to a diagnosis of rheumatic fever complicating sickle cell anemia are discussed.

Conclusions

1. Severe congestive heart failure in a person with sickle cell anemia is the most constant feature which supports a clinical impression of endocardial abnormalities. Posterior displacement of a barium filled esophagus by an enlarged left auricle indicates mitral valve involvement, but does not mean mitral stenosis in every case. An accelerated sedimentation rate and positive fibrinolysin test are evidence of rheumatic fever.

2. Heart murmurs, cardiac enlargement, a prolonged PR interval, and right axis deviation may occur in uncomplicated cases of sickle cell anemia.

THREE COMMON ORTHOPEDIC PROBLEMS

De Quervain's Disease, Pulled Elbow, and Morton's Toe

ALFRED T. HAMILTON, M.D., F.A.C.S.

RALEIGH

Three common orthopedic problems which receive too little attention in general textbooks of surgery and in general medical and surgical periodicals are (1) the stenosing tenovaginitis of the long abductor and short extensor of the thumb described by de Quervain in 1803; (2) the so-called "pulled elbow," or radiohumeral subluxation; and (3) "Morton's toe," or lateral plantar neuroma.

De Quervain's Disease

The fact that stenosing tenovaginitis of the thumb can be diagnosed with a high degree of certainty makes it difficult to understand why so little is written about it, and why it is so often unrecognized by general practitioners and surgeons, who almost certainly see it frequently. The fact that proper

surgical treatment is uniformly and promptly successful and that conservative management results in prolonged and painful and sometimes permanent disability lends importance to its early recognition.

The symptoms are severe and characteristic. The patient, usually a woman and usually employed in a job requiring forcible thumb action, develops an exquisitely painful and tender area over the lateral surface of the radial styloid. The pain is made worse by active abduction of the thumb, passive adduction of the thumb, and ulnar adduction of the hand. As the symptoms progress, the pain may radiate down the thumb and up the radial forearm, and generalized weakness of the hand, together with a visible and palpable protuberance over the radial styloid, may develop. Although this picture is commonly called a "sprained" wrist or thumb, the true diagnosis can be made absolutely by flexing the thumb into the palm, closing the fingers over the thumb, and forcibly carrying the hand into ulnar adduction. The anguish resulting from this maneuver, associated with the localization of the pain and tenderness over the radial styloid, makes the diagnosis certain.

Operative treatment is as simple as it is effective. Under local or general anesthesia, and preferably with a tourniquet around the wrist, a small longitudinal incision is made over the lateral surface of the radial styloid. Care should be taken to avoid the large vein in this area and the dorsal cutaneous branch of the radial nerve, which arches dorsally near this point. The incision is carried downward onto the annular ligament, which is divided. Adherent to the annular ligament at this point, and incorporating the ligament into its inflammatory process is the diseased synovial sheath, which encases, in the radial groove, the tendons of the abductor pollicis longus and the extensor pollicis brevis. Division of the annular ligament and the sheath will release the two incarcerated tendons.

If the process is acute, the operator may find the sheath to contain fluid; if it is an old, chronic process, the sheath will be dry. The stenotic sheath may be soft and edematous, but if the process has been present for any length of time, it will be thickened, firm, and of cartilaginous consistency. In the latter case, we invariably resect a portion of the sheath on either side of the point of division. Upon release of the tendons, the tourniquet is removed, bleeding controlled, and the skin and subcutaneous tissue closed in two layers. When the wound is dressed, care is taken to leave out the thumb so as to encourage early motion.

Pathologically, the process is one of inflammation accompanied and succeeded by repair. Sections of tissue may show simply edema and infiltration of the synovia, associated with moderate fibroblastic activity in the surrounding tissue. As the process develops, the synovia becomes thinned out and may disappear altogether, while the adventitia of the sheath becomes fibrosed and may undergo hyaline and cartilaginous change.

The disorder is of particular interest and importance to those physicians dealing with trauma, especially of an industrial type. The untreated case will practically never subside under conservative management in less than four months, and in many cases the period of disability is much longer. Very few patients who are so managed will want to return to their original occupations after recovery. Surgically treated, such patients can be expected to return to normal duty within two to four weeks.

"Pulled Elbow"—Radiohumeral Subluxation

One summer day, a frantic mother brought her 2 year old "paralyzed" child to my office. She said that the day before the child had whimpered and protested when her left arm was touched; under no circumstances would the child move the hand, forearm or elbow; that the arm hung lax at the child's side; and that nothing could induce the baby to allow it to be handled. As far as could be determined, there had been no trauma, though it later developed that the baby had been pulled to its feet by the injured arm.

I examined the arm and believed it to be tender around the elbow, but all motions, although painful, were apparently possible, and there was no swelling. I made roentgenograms of the entire arm, which were negative for fracture or dislocation. I could elicit no reflexes, and could induce no active motion of the arm.

There I was with a paralyzed child and no hint as to the diagnosis. The baby had a slight temperature elevation, and I called the patient's pediatrician, fearing, though not believing, that this was poliomyelitis. The mother departed, even more frantic than when she arrived, and I never saw her again. I had my secretary call the next day, how-

ever, and was told that my consultant had "bent the elbow and popped a bone back in place," and that the child was now well.

Local inquiry and hasty research ended this entity as a source of embarrassment. Since that time I have had frequent opportunities for prompt recognition and dramatic correction of an amazingly common disorder. The clinical picture is always the same; the roentgenogram is always negative, and should not even be taken. The radial head is in its normal alignment but has slipped up on its rim—a fact not apparent in roentgen studies. Flexion of the elbow, followed by quick, forced supination of the hand, invariably corrects the displacement, and the little click that accompanies the maneuver is readily palpable if the thumb is pressed over the radiohumeral joint as the supination is effected.

The response to this therapy is immediate and delighting. We keep on hand all-day suckers for just such patients. If the good arm is kept busy, the "paralyzed" arm will be immediately employed for purposes of obtaining the sucker, and the mother, convinced, will leave the office relieved and gratified.

Morton's Toe

Practically every doctor sees fairly often the tightly shod, overweight, middle-aged woman who has attacks of exquisite pain in the anterior portion of the foot. The pain is localized at the base of the third and fourth toes, and the syndrome has been known since 1876 as "Morton's toe." The condition is customarily treated conservatively with low heeled and more capacious shoes, metatarsal bars and pads, and hot applications—quite frequently without success.

The essential pathologic process involved in this syndrome is a degenerative and proliferative perineural tumefactive fibrosis, involving usually the anastomotic loop between the medial and lateral plantar nerves. Cases which persist after conservative treatment can be relieved by excision of the "neuroma." This approach to the problem was described as early as 1893, but it is still not used as frequently as it should be.

The clinical picture is clear: severe paroxysms of pain beneath the third and fourth metatarsal heads. The pain often radiates, and most frequently comes on while the victim is walking; it is usually relieved by removal of the shoes. There may be paresthesias and cramping, and the malady is most often seen in overweight women whose shoes are too tight and too high heeled. Pressure underneath the third and fourth metatarsal heads and compression of the ball of the foot can be expected to elicit the pain.

Surgical management is not difficult. With a tourniquet above the operative site, a small dorsal longitudinal incision is made over the web between the fourth and fifth metatarsal heads. Dissection is carried downward until the bulky, glistening white, encapsulated tumor is seen. This is excised, and the wound is closed in two layers. Relief, though not universal, is obtained in a very large percentage of cases.

ADIPOSIS DOLOROSA

With Report of a Case

WALTER SPAETH, M.D.

DURHAM

Painful obesity is such an infrequent condition that the report of an additional case seems to be warranted. Dercum[1], in 1892, reported 3 cases of obesity associated with symptoms involving the nervous system. The distribution of fat in these 3 patients differed from ordinary obesity in that it occurred in an irregular manner, involving corresponding areas of the upper and lower extremities. The fat deposits were at first limited to these areas, but later made their appearance elsewhere. In every instance the enlargement was accompanied by pain at some time. Other neurologic symptoms, such as a sensation of coldness, anesthesia, diminished cutaneous sensibility, or motor weakness also occurred. Because of the two outstanding features of this syndrome—pain and fatty tumors — Dercum proposed the name adiposis dolorosa.

Case Report

The case reported below was seen at Duke Hospital in May, 1947.

First admission

A 50 year old white, married woman was admitted to Duke Hospital on May 15, 1947, with a chief complaint of pain in the joints for the past two years. Her family history, marital history, and past history were noncontributory.

Although the patient was admitted for treatment

From the Department of Medicine, Duke University School of Medicine, Durham, North Carolina.

1. Dercum, F. X.: Three Cases of a Hitherto Unclassified Affection Resembling in Its Grosser Aspects Obesity, but Associated with Special Nervous Symptoms: Adiposis Dolorosa, Am. J. M. Sc. 104:521-535 (Nov.) 1892.

of early atrophic arthritis involving the shoulders, ankles, knees, wrists, and proximal phalangeal joints of her hands, the presence of multiple, discrete, painful subcutaneous nodules was realized to be one of the chief causes of her distress.

Twenty-three years ago, during her first pregnancy, a small, lobulated, nontender subcutaneous nodule appeared over the medial aspect of her left elbow joint. During the past four years, small, freely movable nodules had developed in the superficial and deep subcutaneous tissue of the buttocks, the lateral portions of each thigh, the lumbosacral region, and the dorsum of the forearms. These tumors had increased in size. Tenderness of the nodules was noted intermittently. She had observed at times that pressure from a corset would produce severe pain. Body pressure induced by lying on her back in bed had caused pain in these nodules severe enough to force her to sleep on her side. This pain had never radiated along the course of nerve trunks, but had remained localized to the area of the nodules. Spontaneous pain had occurred in the nodules, and during those times she believed that the nodules were larger.

For the last several years the patient had gained weight steadily, until three years before admission she weighed 176 pounds.

Physical examination showed the temperature to be 37 C. (98.6 F.), pulse 66, respirations 14, blood pressure 124 systolic, 78 diastolic, height 158 cm. (5 feet, 2 inches), weight 69.3 Kg. (153 pounds).

The patient was an alert white woman with obesity involving mainly the buttocks, thighs and lower legs. The thorax and upper extremities were smaller in size and more in proportion to her height. No lesions or abnormal pigmentations were present in the skin. Beneath the skin and lying freely movable in the subcutaneous tissue of the lateral portions of the thighs and buttocks, in the lumbosacral region of the trunk, and in the forearms were numerous nodules, firm but not hard in consistency, and measuring 1-3 cm. in diameter. Most of these nodules were tender. There seemed to be no relationship between the distribution of the nodules and the course of the nerve trunks. The subcutaneous tissue was loose.

Examination of the head, neck, thyroid, chest, and abdomen, including pelvic and rectal examination, revealed no abnormalities. Neurologic examination was normal. Examination of the extremities revealed a spindle-shaped deformity involving all the proximal phalangeal joints of the right hand, and, to a lesser extent, the corresponding joints of the left hand. There was moderate limitation of motion in these joints. Minimal swelling of both knee joints was present, and a patellar click could be elicited bilaterally. The ankle joints were also slightly swollen. No tenderness or increased heat was noted in any of the joints. Varicose veins were present bilaterally; however, no dependent edema was evident.

The hemoglobin was 12.3 Gm. (80 per cent), red blood cells 3,530,000, mean corpuscular hemoglobin content 30 per cent. There were 6800 white blood cells with 64 per cent segmented polymorphonuclears, 29 per cent small lymphocytes, 5 per cent large lymphocytes, 1 per cent monocytes, and 1 per cent eosinophils. Platelets were normal. Urine examination was normal, and the Kahn test was negative. The fasting blood sugar level was 83 mg. per 100 cc. Blood cholesterol was 226 mg. per 100 cc. The basal metabolic rate was reported as —28.

Roentgenograms of the hands revealed a moderate degree of atrophic arthritic changes about the phalangeal joints. Examination of the right hip failed to show any abnormalities. An electrocardiogram was interpreted as follows: "Sinus arrhythmia interrupted by ventricular premature beats with areas of sino-auricular block. Bundle branch block of slurred S wave type also present." Biopsy of multiple nodules revealed only fatty tissue.

On an 1800 calorie diet in the hospital the patient lost 2 Kg. (4.4 pounds) in nine days.

Second admission

Thirteen months after discharge the patient returned to the hospital. While at home she had remained on the reduction diet for several weeks, and during that period lost several pounds. With the decrease in weight she thought that there was a slight decrease in the size of the subcutaneous nodules, and a definite decrease in both spontaneous and pressure pain within the nodules. However, following this period of improvement she ignored the diet and subsequently gained 10 pounds. With this gain in weight there had been a gradual return of the episodes of pain in the nodules. The pain was characteristic in that it was not constant. Again she stated that body pressure while lying in bed produced pain in the dependent nodules, which was severe enough to cause continual movement in bed and subsequent insomnia. The spontaneous pain in the nodules become more severe, and concomitantly enlargement of the nodules was noted. The patient had also noted a tendency to bruise easily. No new nodules had appeared.

In the past few weeks exacerbation of her arthritis, involving chiefly her knees and the proximal phalangeal joints of her hands, had occurred. This was manifested by pain and swelling of the involved joints. No erythema or free fluid was evident. The patient complained of fatigability and lassitude due to sleeplessness, but no marked degree of asthenia.

Physical examination was not materially different from that on the previous admission, except for slight accentuation of the arthritic changes in the proximal phalangeal joints of her hands. No free fluid was present in the knee joints. Tenderness could be elicited in several nodules in the lumbar region.

The hemoglobin was 13.2 Gm. (85 per cent), red blood cells 5,340,000, mean corpuscular hemoglobin 24.7, mean corpuscular volume 82.5, reticulocytes 3.6 per cent, and platelets 600,000 per cubic millimeter. There were 7200 white blood cells, with 62 per cent segmented polymorphonuclears, 1 per cent eosinophils, 1 per cent basophils, 7 per cent monocytes, 6 per cent large lymphocytes, and 23 per cent small lymphocytes. The hematocrit was 44 volumes per cent. Bleeding time, clotting time, clot retraction, and the Rumpel-Leede test were within normal limits. The Kahn test was negative. The urine was normal. Blood sugar was 100 mg. per 100 cc., serum cholesterol 250 mg. per 100 cc., and serum proteins 7.2 Gm. per 100 cc. (albumin 4.1, globulin 3.1 Gm.).

Roentgen examinations revealed the lungs to be clear and the heart slightly enlarged to the left; the right knee showed minimal osteoarthritic changes; and anterior-posterior and lateral films of the skull revealed no abnormalities in general or in the region of the sella turcica. An electrocardiogram revealed a normal sinus rhythm, with left axis deviation and an intraventricular conduction block of the right branch type. There had been no significant change since the previous record. The cause of this abnormality was not evident.

Comment

Dercum's disease (adiposis dolorosa) is to be recognized as a clinical entity, and should always be considered in the differential diagnosis of localized pain and swelling. The

symptom complex is unusual, though not rare. It has been found to occur seven times as frequently in females as in males. The incidence is greatest during middle age—from 45 to 60 years. The frequency with which the disease develops during or immediately following the menopause seems to be more than just a coincidence.

Major manifestations of adiposis dolorosa are intermittently painful lipoid tumors, and in a majority of cases asthenia and psychic disturbances. The onset and development of the disease are usually insidious and gradual. Not infrequently a history of alcoholism and syphilis is obtained.

Since the opening of Duke Hospital, the diagnosis of adiposis dolorosa has been made in 6 previous cases. All 6 cases occurred in white women. The ages of the patients ranged from 38 to 79, the average being 55 years. Treatment consisted mainly of a reduction diet and sedation.

The case reported here is the seventh one observed in this hospital. The diagnosis was suggested by the presence of lobulated subcutaneous tumors which were painful to pressure. Symptoms of spontaneous pain and swelling of the tumors were present. Psychic disturbances and asthenia were minimal. Multiple neurofibromatosis was considered as a diagnostic possibility. However, the clinical characteristics of this disease were not present and the biopsy report conclusively ruled it out. No obvious cause for the patient's tendency to bruise easily was demonstrable.

The response of the patient to a reduction diet and weight loss was suggestive of improvement. Within a few weeks, however, she returned to her usual diet, and a gain in weight resulted. Conclusions cannot be drawn from this short period of observation.

Classification

Vitaut[2] in 1901 emphasized the asthenia and psychic manifestations which commonly accompany this disease. He also divided cases of adiposis dolorosa into three groups, depending upon the arrangement of the adipose deposits: (1) *nodular*, (2) *circumscribed diffuse*, and (3) *generalized diffuse*. Of the three types, the circumscribed diffuse is the most common, and the generalized diffuse is next in frequency.

Manifestations

Price[3] and Lyon[4] have reviewed the literature on adiposis dolorosa, and grouped together the various manifestations found:

1. *Fat deposits* were most commonly found over the trunk, shoulders, arms, and thighs; the forearms and legs were affected less commonly, and the hands and face rarely. The physical characteristics of the fat deposits varied; they have been described as nodular, lobulated, and as resembling a caked breast, a bundle of worms, or a varicocele.

2. *Pain or tenderness* was either present spontaneously or occurred with manipulation of the fatty tissue. Spontaneous pain involving the adipose tissue often occurred in paroxysms, and was described by the patients as being dull, aching, throbbing, burning, tearing, or shooting in type. Pain upon pressure over the course of large nerve trunks was rare, while pain upon pressure over fatty deposits occurred intermittently. It has been suggested that this phenomenon is dependent upon local circulatory changes—namely, stasis, which increases the firmness, tension, and size of the fatty deposits. Frequently discoloration of the affected areas has been observed.

3. *Asthenia* varied in degree from a tendency to fatigability to extreme weakness or prostration. It bears a direct relationship to the duration of the case.

4. *Psychic manifestations* also varied in intensity from irritability to true dementia. Confusion, stupor, mental depression, melancholia, impairment of memory and complete loss of memory have all been recorded. The most common mental syndrome appears to be one of irritability with mental depression, associated with some failure of memory and a marked hypochondriacal tendency. Suicide has been recorded.

In addition to the four cardinal symptoms listed above, *vasomotor phenomena* such as flushing of the skin, dermatographia, urticaria, cyanosis of the extremities, transitory edema, anhidrosis, and hyperhidrosis have been reported. A hemorrhagic tendency and purpura have also been described.

Motor symptoms of tremor, fasciculations, muscular cramps, torticollis, epilepsy, paralysis, slowness of speech, and reflex changes,

2. Vitaut, cited by Bochroch, M. H.: A Case of Adiposis Dolorosa (Dercum's Disease), Am. J. M. Sc. 124:569-570 (Oct.) 1902.

3. Price, G. E.: Adiposis Dolorosa: A Clinical and Pathological Study, with the Report of Two Cases with Necropsy, Am. J. M. Sc. 137:705-715 (May) 1909.

4. Lyon, I. P.: Adiposis and Lipomatosis, Arch. Int. Med. 6: 28-120 (July) 1910.

including increased, decreased, or absent reflexes, have been attributed to adiposis dolorosa. It seems reasonable to assume that in some instances these symptoms may have been due to co-existing disease processes.

Sensory symptoms of anesthesias, hyperesthesias, and paresthesias involving pain, temperature, touch, and position sensations have been reported.

Variations

Kling[5] in 1937 reported a study of 112 cases which varied from the usual picture of adiposis dolorosa, and which he designated as *juxta articular adiposis dolorosa*. In these cases there appeared accumulations of subcutaneous adipose tissue about the joints. These were markedly tender to touch or pressure, and were not associated with gross alterations in the sensitivity of the overlying skin. The condition was found to occur most commonly in obese women past middle age. It usually presented a characteristic bilateral distribution, involving the inner aspects of the knee joints most frequently, and the medial surfaces of the elbows less often. It was found rarely on the lateral surfaces of the ankles and hips. The tender fat was often found to be markedly indurated or in the form of palpable, distinct lobules. Menopausal symptoms and an increase in the systolic blood pressure were found in a high percentage of cases. This symptom triad had previously been reported in 1930 by Gram[6].

These patients complained chiefly of pain and stiffness in the involved joints. Clinical and laboratory examinations revealed slight or moderate osteoarthritis in 60 per cent of the cases; however, more careful physical examination showed that the pain and tenderness originated in the subcutaneous tissue and not in the joints. Kling reported hypofunction of the ovaries, thyroid, and pituitary. The basal metabolic rate was reduced in 33 per cent of the cases; hypercholesteremia was present in 87 per cent of the cases. He concluded that this condition was the initial or intermediate state of generalized adiposis dolorosa.

Etiology

The etiology of the syndrome is unknown. Pathologic studies of discrete tumor masses have failed to reveal any other type of tissue than fat. Dercum originally attributed the condition to atrophy of the thyroid gland or some perversion of thyroid function. Waldorp[7] considered adiposis dolorosa to be due to diencephalic disorder. He proposed this theory because the distribution of the obesity resembled that which was thought to be due to disorders of the hypophysis, and he believed that the condition was caused by "perturbations in the trophic diencephalic centers." The pain in the fatty tissue was ascribed to lesions of the optic thalamus or to peripheral neuritis, since the pain was not necessarily constant in intensity. He thought that, as a result of these primary changes, the thyroid and ovary later intervened in the production and maintenance of obesity. Asthenia was attributed to disturbances of the adrenals or of the vegetative nervous system.

In 1925 Winkelman[8] reviewed 15 autopsies reported in the literature, and added one of his own. He considered that the theory of pluriglandular malfunction of the endocrine system was best suited to explain the etiology. His review revealed that in only 2 of the 16 cases were no definite changes found in the ductless glands. Of 11 cases in which the pituitary was examined, 8 showed definite alterations varying in degree from adenocarcinoma to abnormal round cell infiltration. The thyroid glands were abnormal in 12 cases, varying in size from an enlarged gland to a small, atrophic gland, and presenting sclerotic or calcareous changes, or an increased amount of interstitial tissue. The ovaries in 9 cases showed atrophy or sclerosis. The adrenal glands in 3 cases revealed hyperplasia or hyaline areas. The pancreas in 2 cases showed focal areas of increased fat. Pathologic changes present in his own case were an adenoma of the anterior lobe of the pituitary gland, adenomatous hyperplasia of the left adrenal gland, and atrophy of the ovaries.

Although a variety of pathologic lesions have been recorded and several theories advanced to explain this clinical entity, no definite conclusions can be made at this time to explain the etiology of adiposis dolorosa.

Treatment

Because of the obscure etiology, therapy is necessarily empirical. Surgical removal of continually painful nodules has been per-

5. Kling, D. H.: Juxta-Articular Adiposis Dolorosa. Arch. Surg. 34:599-630 (April) 1937.
6. Gram, H. C.: A Symptom-Triad of the Post-Climacteric Period. Acta med. Scandinav. 73:139-207, 1930.
7. Waldorp, C. P.: An Original Clinical Interpretation of Dercum's Disease (Adiposis Dolorosa). Endocrinology 8: 54-60 (Jan.) 1924.
8. Winkelman, N. W. and Eckel, J. L.: Adiposis Dolorosa (Dercum's Disease): A Clinicopathologic Study. J.A.M.A. 85:1945-1949 (Dec. 19) 1925.

formed with success. Massage, hydrotherapy, reduction diets, psychotherapy, analgesics, and sedation all play a role in the relief of the patient's symptoms. The use of thyroid extract has been reported, but without beneficial effect. Wohl and Pastor[9] successfully treated 3 patients with marked asthenia by the oral use of amino-acetic acid and Prostigmine. Further reports of cases with severe asthenia treated by this method would be of interest.

Summary

1. A review of the literature on the entity, adiposis dolorosa or Dercum's disease, is presented, and a case of the nodular variety is reported.

2. Thus far the etiology of adiposis dolorosa remains unknown; however, the prevailing opinion is that this condition is due to pluriglandular malfunction of the endocrine system.

3. Treatment of adiposis dolorosa is mainly symptomatic. The condition seems to be aided by a general reduction in body weight.

9. Wohl, M. G. and Pastor, N.: Adiposis Dolorosa (Dercum's Disease); Treatment of the Asthenic Phase with Prostigmine and Aminoacetic Acid. J.A.M.A. 110:1261-1264 (April 16) 1938.

ABDOMINAL PREGNANCY WITH PREMATURE SEPARATION OF THE PLACENTA AND MULTIPLE COMPLICATIONS

A Case Report

PAUL E. SIMPSON, M.D.

RALEIGH

"Following extrusion of an undamaged embryonic sac from some such location as the outer end of the fallopian tube, or the surface of the ovary, the villous predecessor of the placenta can form a secondary attachment to the broad ligament, the abdominal wall, or to the mesentery and intestines, with the result that an abdominal pregnancy develops."[1]

According to Mall[2], not more than 1 per cent of all extra-uterine pregnancies reach full term. Stander[3] states that "the results following celiotomy in advanced cases of extra-uterine pregnancies with a living child have improved greatly since the introduction of aseptic methods." In 1887 the mortality was 93 per cent; in 1897, 31 per cent. In 1933 Cornell and Lush[4] reported 236 cases, with a mortality of 14.3 per cent.

The following case report illustrates quite vividly several of the reasons for a continued high mortality rate in this interesting and infrequent complication of pregnancy.

Report of Case

History

The patient, a 21 year old, white, married woman, was first seen at her home on October 30, 1947, complaining of pain in the abdomen. Her last menstrual period had begun on June 14, 1947, and her previous menstrual period one month before. Both had been normal. Her calculated date of confinement was March 21, 1948. Her prenatal care had consisted of a general physical examination and several urinalyses and blood pressure readings.

Early on the morning of October 30, 1947, the patient had acute pain in the abdomen and in the right flank. She had had frequent nausea and vomiting and occasional vaginal spotting throughout the preceding day. She had also noticed that her abdomen became hard and soft in a rhythmic manner. She had been perfectly well otherwise.

The family history was irrelevant. The patient had never had any blood transfusions, and her only previous pregnancy had terminated in the uneventful delivery of a normal male infant. Her menarche occurred at the age of 10. She had always been in good general health. At the age of 6 she had had an appendectomy.

Physical examination

On physical examination the temperature was found to be 99.6 F., the pulse 90, blood pressure 120 systolic, 70 diastolic. The patient was a well developed and well nourished young white woman complaining of severe pain over the entire abdomen. The general physical examination was not remarkable. The spine showed extreme tenderness to fist percussion in both costovertebral angles. This was more pronounced on the right. The abdomen was distended by a mass which appeared to be a gravid uterus, extending almost to the umbilicus. This mass contracted and relaxed at intervals. There

1. Titus, Paul: Management of Obstetric Difficulties, ed. 3, St. Louis, C. V. Mosby Company, 1945, p. 305.
2. Mall, F. P.: (a) The Cause of Tubal Pregnancy and the Fate of the Inclosed Ovum, Surg., Gynec. & Obst. 21:289-298, 1915; (b) On the Fate of the Human Embryo in the Tubal Pregnancy, Carnegie Inst., Contrib. Embryol., Washington, 1915, v. 1, no. 221, pp. 3-104.
3. Stander, H. J.: Textbook of Obstetrics, New York, D. Appleton-Century, 1945, p. 752.
4. Cornell, E. L., and Lash, A. F.: Abdominal Pregnancy, Internat. Abst. Surg., pp. 88-104 (Aug.) 1933.

was an old, well healed McBurney scar on the right. The liver, spleen, and kidneys were not palpable. There was extreme tenderness over the entire abdomen, particularly over the suprapubic mass. There was minimal rebound tenderness, but no referred rebound tenderness.

The pelvic examination showed a small amount of creamy discharge in the vagina. The uterus seemed to be enlarged to the size of a three to four months' pregnancy, but this part of the examination was not entirely satisfactory because of the extreme tenderness of the abdomen. The adnexa were not felt. The cervix was soft and blue, and showed several old, healed lacerations. The coccyx was movable. The sacral curve was normal.

Course in the hospital

The patient was admitted to the hospital with tentative diagnoses of pyelitis of pregnancy, questionable intra-abdominal bleeding, premature separation of the placenta, and inevitable abortion. The accessory clinical findings during the patient's stay in the hospital are shown in table 1.

For six days the patient was absolutely afebrile, but continued to complain of nausea and vomiting and abdominal pain. The diagnosis of pyelitis was discarded in favor of threatened abortion, after her temperature chart had been observed for twenty-four hours. A second pelvic examination was still unsatisfactory. The fetal heart continued strong and normal until November 4, 1947, when it could no longer be heard. The patient volunteered the information that no further fetal movements had been felt.

The drop in hemoglobin (table 1) made us suspect that the patient had had a complete separation of the placenta with concealed hemorrhage. The urinalyses and blood chemistry determinations (table 1) were indicative of moderate toxemia, which made the diagnosis of placental abruption seem more likely. After a roentgenogram was reported as showing suspected fetal death, and when the hemoglobin continued to fall, it was felt that immediate interference was indicated.

The patient's blood was type A and Rh positive. On November 6, 1947, after repeated failures to cross-match her blood with that of type A donors, it was found to be compatible with blood from type 0 donors. She was then taken to the operating room for a sterile vaginal examination under anesthesia.

Fig. 1. Flat plate of the abdomen, showing the fetus in the abdominal cavity.

This examination revealed a long, rigid cervix that barely admitted one finger. The uterus was felt to be two to three times the normal size, and fetal parts lying outside the uterus could be palpated. The diagnosis of abdominal pregnancy was made at this time. Within twenty minutes the patient was given ether by the open drop method. Through a midline abdominal incision, a living premature female infant was delivered from the abdominal cavity. The placenta was attached to the small bowel, transverse colon, omentum, and posterior abdominal wall. There was approximately 750 to 1000 cc. of dark, clotted blood in the peritoneal cavity. By means of suction and the use of multiple laparotomy pads the placental site was exposed and inspected. A moderate separation of the placenta along the posterior abdominal attachment was found. The uterus was enlarged to twice the normal size, but otherwise appeared normal. The right tube and ovary were absent; the left tube and ovary appeared normal.

The umbilical cord was tied and cut close to the placenta. The venous oozing from the placental separation could be controlled by pressure, and therefore three Gelfoam sponges were placed over the bleeding area, and a one inch uterine pack was placed

Table 1

Date	Hgb. (%)	RBC	WBC	Differential Count	Urine	Blood Chemistry Determinations (mg. per 100 cc., unless otherwise specified)
10/30/47	71	3,720,000	17,800	4 stabs 82 segs 11 lymphs 3 monos	(Voided) Acid; alb. 1+; no sugar; sp. gr. 1.021; 20-25 WBC	
11/ 3/47	58		9,200	83 segs 16 lymphs 1 mono		
11/ 5/47	52		17,200	7 stabs 87 segs 6 lymphs	(Cath.) Alb. 2+; many waxy, gran. and hyaline casts; 2-3 WBC; occ. RBC	NPN 43 Uric acid 6.85 Sugar 93 CO_2 combining power 50 vol. %
11/ 6/47	55		24,500	4 stabs 90 segs 3 lymphs 1 mono 1 eosin		
11/ 7/47	48		13,900	7 stabs 83 segs 8 lymphs 1 mono 1 eosin	(Cath.) Acid; alb. 4+; sugar 1+; hyaline & gran. casts; 6-8 RBC; 35-40 WBC	
11/ 9/47	62		17,300	4 stabs 70 segs 23 lymphs 1 mono 2 eosins	(Voided) Alb. 2+; 18-23 WBC with clumps; 3-5 RBC	NPN 36.5 Uric acid 3.55 Chloride 470
11/11/47	65	3,360,000	17,600	1 stab 79 segs 18 lymphs 2 monos	(Voided) Alb. 3+; 14-16 WBC; many RBC & gran. casts	Uric acid 3.4
11/13/47	68		12,000	79 segs 19 lymphs 2 eosins		NPN 40 Uric acid 2.3 CO_2 comb. power 54 vol. % Total proteins 5.3 Gm. %
11/14/47	46	2,410,000	17,800	1 stab 88 segs 10 lymphs 1 mono		
11/15/47	62	3,280,000	21,200	1 stab 88 segs 11 lymphs	(Voided) Alb. 3+; acid; loaded with WBC & RBC	NPN 72.5 Uric acid 1.95 Creatinine 0.8
11/17/47	50	2,920,000	10,000	74 segs 24 lymphs 1 mono 1 eosin		NPN 35 Icterus index 84 units
11/19/47	68	3,520,000	8,300	77 segs 15 lymphs 6 monos 1 eosin	(Voided) Acid; alb. 1+; many WBC & RBC	
11/24/47	71		16,300	82 segs 15 lymphs 3 eosins	(Voided) Alb. 3+; many WBC; 6-8 RBC	NPN 34 Total prot. 5.9 Gm. % Icterus index 69 units
12/13/47	75	3,810,000	6,300	2 stabs 66 segs 29 lymphs 2 monos	(Cath.) Acid; alb. 2+; 2-4 RBC; occ. WBC	

against the placenta, with the distal end of the pack extending out through the abdominal incision. The abdomen was closed in layers.

The patient was in extreme shock throughout the procedure, and received intravenous glucose and blood continuously. She was returned to the ward in profound shock. The total blood loss was approximately 3000 cc.

The baby weighed 2 pounds and measured approximately 13 inches in length. She lived for seven days. An autopsy showed distention of the abdomen, with gangrene of the transverse colon and a small perforation of the transverse colon.

During the first twelve hours postoperatively the patient received 1900 cc. of blood plus 2000 cc. of a 5 per cent solution of glucose in saline and water. For the next six days her general condition gradually improved with the aid of multiple transfusions, intravenous glucose, oxygen, and the Miller-Abbott tube. The abdominal pack was removed twenty-four hours postoperatively, and the abdominal incision healed by first intention. She received penicillin and sulfadiazine, together with other supportive measures.

On November 13, 1947—the seventh postoperative day—the patient began to have pain in the abdomen and right side of the chest, with a rising temperature, pulse, and respirations. Her blood pressure dropped to shock levels. She was again sustained with blood, oxygen, and morphine. It was felt that she had had a secondary abdominal hemorrhage from the placental site, together with an embolus to the left lung. For the next ten days her temperature rose daily to 103 F., and the pulse rate ranged between 90 and 120. Roentgenographic findings were compatible with a pulmonary embolus. A small amount of fluid developed in the right pleural cavity, but not enough to warrant drainage.

On November 26, 1947, the patient had a recurrence of the signs and symptoms of a left pulmonary embolus. This was of a more moderate character, but was also substantiated by roentgenogram. Following this episode, the patient made a gradual slow recovery, though she continued to have daily elevations of temperature to 101 F. Her pulse rate averaged 100. During the next two weeks of hospitalization an abdominal mass, which was thought to be placenta and organized blood clot, developed. A Friedmann test was negative.

On December 14, 1947, the patient was discharged from the hospital, forty-four days after admission. Her weight was 113 pounds, and the blood pressure was 118 systolic, 80 diastolic. A roentgenogram of the chest showed both lungs to be clearing well. Pelvic examination on discharge showed the uterus to be approximately normal in size, but because of tenderness no other organs could be made out. It was felt that the abdominal mass was regressing in size.

Follow-up examinations

The patient was seen four times between December 14, 1947 (the day of her discharge from the hospital) and February 23, 1948. At this time the general physical examination was essentially normal, and the abdominal incision was well healed. The patient had had two normal menstrual periods, and had had no genitourinary or gastrointestinal complaints. On pelvic examination the uterus could not be made out as such, but seemed to be continuous with a pelvic mass, which rose $8\frac{1}{2}$ inches above the symphysis. The mass was well fixed and slightly tender to motion. The adnexa were not felt. The cervix was clean and could be sounded only one inch. She was fitted with a diaphragm and advised to return in two months.

The patient was last seen on July 10, 1948, at which time general physical examination and laboratory studies were all within normal limits. The pelvic examination showed a normal uterus, left tube and ovary, situated anteriorly to a hard, globoid mass which measured approximately 5 inches in diameter. The mass was freely movable, but slightly tender. The patient has not been handicapped in any way. She was advised to return for examination in three months, at which time a decision will be made as to whether or not celiotomy and removal of the mass will be done.

Comment

The diagnosis of intra-abdominal pregnancy in this patient was not suspected until a completely satisfactory pelvic examination was carried out under anesthesia. Nevertheless, she presented a fairly typical picture of intra-uterine pregnancy with placental ablation and completely concealed hemorrhage.

The patient had multiple complications, any one of which might have caused her death. She received a total of 13 pints of blood. Obtaining this amount was in itself a gigantic task, since the patient and her

husband were strangers in the community, and since our blood bank was not yet in operation. The 13 pints of blood were all from type O donors. It never was possible to cross-match her blood compatibly with blood from type A donors, although repeated checks showed her blood to be type A.

At the time the first pulmonary embolus occurred, the use of anticoagulants was suggested by the medical consultant. It is known that this therapy is safe and rational where the placenta is normally implanted on the uterine wall, but we were not able to find any information as to its possible hazards where the placenta is implanted outside the uterus. For this reason it was decided to risk subsequent emboli rather than the possibility of a third intra-abdominal hemorrhage at a time when our sources of blood were exhausted.

It was assumed that this patient had had the right tube and ovary removed at the age of 6 years during a routine appendectomy, since they could not be identified at operation.

The cause of this intra-abdominal pregnancy could not be determined. Since the left tube and ovary at the time of operation presented no evidence of previous abnormality, the possibility of a primary intra-abdominal pregnancy must be entertained. Most authorities now believe that primary abdominal pregnancy is theoretically possible, but its actual occurrence has never been proved.

The abdominal mass which developed after operation should not require surgical treatment unless an abscess forms or intestinal obstruction occurs. This mass can be assumed to be placenta and organized blood clot, which will probably be absorbed within six to twelve months.

Despite the ordeal which this patient has been through, she is eager for another pregnancy as soon as possible. She will be followed closely for twelve months, and if there are no contraindications at the end of that time, another pregnancy will be advised.

Summary and Conclusions

1. A case of abdominal pregnancy, with premature separation of the placenta, secondary hemorrhage, and two episodes of pulmonary embolus, is reported. The baby was premature and died seven days after delivery, but the mother made a complete recovery.

2. Adequate pelvic examination, under anesthesia if necessary, is essential in the diagnosis of cases of this type.

3. The administration of huge quantities of blood is believed to be responsible for saving this patient's life.

4. A peculiarity of blood typing and cross-matching is pointed out.

5. The question of the use of anticoagulants in patients with ectopic placental implantation is raised.

The author wishes to give credit to Dr. Hubert Haywood, Dr. David Kleiman and Dr. Jane Herring Wooten for their excellent management of the medical and pediatric aspects of this case.

THUMBNAIL SKETCHES OF EMINENT PHYSICIANS

SIR WILLIAM OSLER

III

OSLER AND PUBLIC HEALTH

Almost lost among his many activities as clinician, teacher, and bibliophilic historian are William Osler's services in the field of public health, which in time will undoubtedly be regarded as of greater significance than his clinical contributions. Evidence of Osler's interest in public health matters may be found as far back as his Montreal years. In 1882, together with A. W. Clement, a veterinary student, he made an exhaustive investigation of parasitic infestation in the hogs intended for the Montreal market. This study dealt chiefly with trichina, echinococcus, and cysticercus. The report based upon it, which was presented to the Montreal Board of Health in 1883, emphatically pointed out the need for meat inspection.

At the same time, however, it is clear that this study was but a by-product of Osler's interest in parasitology. He seems to have evinced little or no interest in the Citizens' Public Health Association, a voluntary organization which was called into being in 1875 to improve the sanitary condition of Montreal. In fact, according to Cushing[1], Osler was not at all distracted by the prevailing agitation over the smallpox epidemic which then raged in Montreal. At this period in the young professor's career his concern with pathology outweighed most other interests. A report "On the Pathology of Miner's Lung,"[2] presented by Osler in 1875

1. Cushing, H.: The Life of Sir William Osler (2 vols.), Oxford, Clarendon Press, 1925.
2. Osler, W.: On the Pathology of Miner's Lung, Canada M. and S. J. 4:145-168, 1875-76.

to the Medico-Chirurgical Society, deals at length with the experimental production of anthracosis, but does not go into the preventive aspects of the condition.

Osler's role in public health was essentially that of a propagandist and agitator. His greatest contribution was made to the anti-tuberculosis movement, but typhoid fever, pneumonia, the venereal diseases, and medical social service all received his attention. It was in Baltimore that Osler really began these activities which he was to pursue to the end of his life. In the main, his efforts were directed toward arousing the public from its indifference and dispelling its ignorance. But he was also aware that action by government was equally necessary. In 1893, the New York City Health Department undertook to require that cases of pulmonary tuberculosis be reported. Osler espoused this important advance in public health, and wrote a strong plea in favor of the registration of tuberculosis. Actually his participation in the campaign for tuberculosis control had begun two years earlier, in 1891, when he addressed the Maryland Medical and Chirurgical Faculty on "The Healing of Tuberculosis."

Thenceforth William Osler vigorously agitated for the control of tuberculosis on both a local and a national scale. In 1902 this subject was very much in the forefront of interest, and in Baltimore the local Board of Health had recommended to the Maryland legislature the appointment of a Tuberculosis Commission. To secure popular support for this recommendation, a public meeting was held under the auspices of the Medical and Chirurgical Faculty, the Laennec Society, and the Maryland Public Health Association. (In passing, it may be noted that Osler had been the prime mover in the organization of the Association in 1897.) At the meeting Osler followed the mayor of Baltimore, who had uttered a few apathetic remarks. Shaking his finger in the mayor's face, to the amazement of the audience, Osler voiced his indignation and his views:

"Mr. Chairman and my long-suffering, patient, inert fellow-citizens: . . . what is our condition in this city, and what are we doing for the 10,000 consumptives who are living to-day in our midst? We are doing, Mr. Mayor and fellow-citizens, not one solitary thing that a modern civilized community should do. Through the kindness of a couple of ladies —God bless them!—I have been enabled in the past three or four years to have two medical students of the Johns Hopkins University visit every case of pulmonary consumption that has applied for admission to the dispensary of our hospital, and I tell you now that the story those students brought back is a disgrace to us as a city of 500,000 inhabitants. It is a story of dire desolation, want, and helplessness, and of hopeless imbecility in every thing that should be in our civic relation to the care of this disease . . ."

And he went on to point out the complete incompetence of the municipal authorities.

"In heaven's name what have they done for us in the past? I can tell you what they have done for us in the thirteen years I have been here. To my positive knowledge they have paved two or three streets east and west, and two or three streets north and south, and by the Lord Harry! I could not point to a single other thing they have done. They haven't given us a municipal hospital, they haven't given us a sewerage system, and we are still begging for lots of other things."

As a result of this meeting a Tuberculosis Commission was created, and from it also came the Maryland Association for the Prevention and Cure of Tuberculosis.

Of considerable significance is Osler's reference to home follow-up care of outpatients by two medical students. This program had been started during the semester of 1898-99 by Blanche Epler, and she was followed the next year by Adelaide Dutcher. Osler's verbal instructions clearly delineated the purpose of home visiting. As reported by Dr. Dutcher, the student was

"to learn all . . . about the patient, his family, and his environment; to advise him of the nature of his disease, its mode of contagion, and method of prevention; to teach him first of all to destroy his sputum because it contained the seed which caused the disease and was the only way of transmitting the disease to others; to give him a moral reason for cleanliness to help him out when natural instincts were lacking; to give the reason why sunlight and fresh air were of preventive and curative value; and to make any suggestions that would be of help in each home . . ."

Obviously these students performed the functions of health educators, visiting nurses, and social workers. It is evident that Osler was a pioneer in America in realizing the importance of the social aspects of medicine. His ideas were later put into practice by students whom he had influenced, and thus helped to create the social service movement which was to become so effective through the writings of Dr. Richard Cabot.

Another result of the meeting mentioned above was the organization, in 1904 at Baltimore, of a Tuberculosis Exhibition to display the results achieved by the Commission that had been appointed in 1902. In addition to its local significance, this exhibition brought together national leaders of the anti-tuberculosis movement, and paved the way for the formation of the organization later known

as the National Tuberculosis Association[3].

William Osler's activities in the fight against tuberculosis did not cease with his departure for Oxford. In 1907, he helped to launch the crusade against tuberculosis in Ireland. But he also knew only too well that the social aspects of the disease demanded organized action, in the last analysis by government. Thus, in 1910, at the Edinburgh meeting of the British National Tuberculosis Association, an afternoon session presided over by Osler was devoted to the relation of the worker to tuberculosis. At the conclusion of this session a resolution was drawn up "to represent to his Majesty's Ministers the advisability of considering a scheme of national insurance against tuberculosis." This was a year before the National Health Insurance Act was passed.

Osler's awareness of the public health needs of his time is clearly revealed in the address of welcome delivered before a conference of Maryland health officers that had been convened in 1897 by the Medical and Chirurgical Faculty. On this occasion he emphasized the need for reorganization of the Board of Health, a hospital for communicable diseases, proper inspection and control of water and milk, and revision of the existing lunacy laws.

Another instance of Osler's activity as an apostle of public health is his address on "The Problem of Typhoid Fever in the United States," which he gave in 1899 before the New York State Medical Society. Here he exposed the unmet sanitary needs of the country. "That imperfect drainage and a polluted water supply means a high mortality rate from typhoid fever is the very alphabet of sanitary science." With these words Osler underscored the essential simplicity of the solution.

William Osler's interest in public health problems remained vital to the very end. During the war (1914-1918) he became active in the campaign against venereal disease. In 1917 he delivered the annual oration before the Medical Society of London, taking as his subject "The Anti-Venereal Campaign."[4] In this address he alluded to the origin of his interest in public health.

"I had the inestimable advantage," he said, "of early professional association with a hero-worshipper, Dr. Palmer Howard, my teacher, and for ten years at Montreal my revered colleague, was a man of keen intellectual attainment. Wide awake when the dawn appeared, he saw with remarkable clearness the immense possibilities of preventive medicine under the guidance of such men as Chadwick, Budd, Simon, Farr, Ward Richardson, Buchanan and Russell. When not talking of Bright and Addison, Stokes and Graves, he was lauding these men, their ways, and their works. Important literary events were the arrival of Dr. Farr's Report and the Report of the Medical Officer of the Local Government Board, as they furnished ammunition for the year, and it was my privilege, if not always my pleasure, to dig out statistics of the various diseases or to abstract some special article."

After exposing the nature of syphilis and gonorrhea, and emphasizing the grave sequelae, such as sterility, infantile mortality, and the later manifestations of these diseases, Osler went on to point out what might be done to combat this problem. The two chief measures advocated were "a campaign of education" and a "scheme of treatment." He pointed out that "the clinic should be the centre in each district of an active educational propaganda . . . By meetings, literature, placards—in every legitimate way—a knowledge of the dangers of venereal disease should be distributed, and the importance of early and thorough treatment insisted upon. The public lavatories, the toilet-rooms of restaurants, railway stations, hotels and factories should be utilized in a crusade against advertising venereal quacks. The stage should be used actively . . ." Hand in hand with education must go treatment. Osler urged reporting of venereal diseases and compulsory treatment. He saw reason for hope in the fact "that the State has at last intervened . . ." Furthermore, he pointed out that "In the matter of health you may trust the people. Once get democracy to realize that it is badly diseased, and it displays a Job like regard for its skin."

An energetic fighter against the needless deaths of peace, a man of broad vision who saw the relations of disease to society, William Osler deserves an honored place in the history of public health. As a citizen and a physician he recognized his duty, and undertook to do what he could to improve the health of the community. William Welch said that "To Osler nothing human was foreign," and it is clear that his activities in behalf of the public health were an expression of this basic attitude.

GEORGE ROSEN, M.D., Ph.D.,
Director,
Bureau of Public Health Education
New York City

3. Knopf, S. A.: A History of the National Tuberculosis Association, New York, National Tuberculosis Association, 1922.
4. Osler, W.: The Anti-Venereal Campaign. Tr. M. Soc. London 40:290-312, 1917.

North Carolina Medical Journal

Owned and published by
The Medical Society of the State of North Carolina,
under the direction of its Editorial Board.

EDITORIAL BOARD

Wingate M. Johnson, M.D., Winston-Salem
Editor

Miss Catherine Johnson, Winston-Salem
Assistant Editor

Mr. James T. Barnes, Raleigh
Business Manager

Paul H. Ringer, M.D., Asheville, Chairman
Ernest W. Furgurson, M.D., Plymouth
John Borden Graham, M.D., Chapel Hill
George T. Harrell, Jr., M.D., Winston-Salem
William M. Nicholson, M.D., Durham
Hubert A. Royster, M.D., Raleigh

Address manuscripts and communications regarding editorial matter to the
NORTH CAROLINA MEDICAL JOURNAL
300 South Hawthorne Road, Winston-Salem 7, N. C.

Questions relating to subscription rates, advertising, etc., should be addressed to the Business Manager, 203 Capital Club Building, Raleigh, N. C.

All advertisements are accepted subject to the approval of the Council on Pharmacy and Chemistry of the American Medical Association.

Annual subscription, $3.00 Single copies, 50¢

Publication office: Carmichael Printing Co., 118 West Third Street, Winston-Salem 1, N. C.

MAY, 1949

THE SESQUICENTENNIAL SESSION

The sesquicentennial session of the Medical Society of the State of North Carolina was noteworthy for many reasons. For the second successive year the attendance record was broken, as 998 physicians registered.

The meeting of the House of Delegates was, as usual, long drawn out, in spite of the attempt to shorten it by having routine reports dealt with by the Executive Committee at a prior meeting.

The report of Dr. Hart's committee on medical insurance, recommending a comprehensive hospital and medical care policy for those with lower incomes, was discussed for more than two hours before it was finally adopted. This was perhaps the most important action taken by the Society, as the proposed insurance program should do much to satisfy the need of thousands of our citizens for good medical care at reasonable cost. Its success will depend upon the cooperation given by the doctors of the state.

Whatever the outcome, it is hard to say too much in praise of Dr. Hart and the other members of the committee, who were confronted with the virtually impossible task of formulating a policy that would be acceptable to all physicians. The policy proposed is not perfect, and apparently gives more consideration to surgeons than to general practitioners and internists. Dr. Hart gave as the reason that it is almost impossible to get enough actuarial data to compute medical fees, while surgical fees are comparatively easy to calculate. As more experience is gained in estimating the cost of medical illnesses, it is expected that more definite coverage will be offered for such conditions.

After the smoke of conflict had cleared away, the cool, convincing arguments of Dr. Hart, supplemented by others—notably Dr. Street Brewer—prevailed, and the House of Delegates voted overwhelmingly to approve the proposed policy.

Perhaps the next most important action taken by the House was the adoption of the report of Dr. Donald Koonce's Committee on Public Relations, providing for the employment of a public relations secretary, and for increasing the annual dues of the State Society to $40.00. The additional $15.00 is to be earmarked for the public relations program. In order to start action immediately, each member of the Society will be assessed $5.00 this year for the employment of a public relations secretary. Although this report called for a second increase of dues within a year after they were raised from $10 to $25, it was adopted without a dissenting vote.

The high light of the session was the Sesquicentennial Banquet, held on Tuesday night. A feature of this was the recognition of seventeen living past presidents and their wives. Special tables were provided for them, and each one was presented in turn by Secretary Roscoe McMillan with appropriate remarks. Dr. Sam Ravenel, as toastmaster, presided gracefully, and had the audience in good humor from the beginning. Dr. Robertson probably established a record for the shortest presidential address ever made to the Society. It was, however, packed with important recommendations.

After the presentation of the president's jewel by Dr. V. K. Hart, the Sesquicentennial Committee — Drs. William deB. MacNider, Paul H. Ringer, and Donnell Cobb—were presented, and Dr. MacNider introduced his

former teacher, Dr. Hubert Royster, who gave a masterly address on "A Century and a Half of Medicine in North Carolina." This address will appear in an early issue of the NORTH CAROLINA MEDICAL JOURNAL.

The guest speaker was Dr. Hugh J. Morgan, professor of medicine at Vanderbilt, whose address was entitled "Then and Now." Dr. Morgan was a leader among the 148 physicians who protested "against the present attitude and policies of the A.M.A. in regard to the problem of medical care." (See the *Journal of the American Medical Association* for February 19, 1949, p. 532.) Most of his address was an eloquent plea for the viewpoint of the 148 "protestants," and a none too thinly veiled criticism of the A.M.A. The reaction of the audience to his address varied from open approval to frank criticism, with all shades of opinion between. None questioned his sincerity nor his eloquence, but many wished that he had chosen to speak on the science or the art of medicine, rather than on its economic and political aspects.

The selection of Dr. Roscoe McMillan as president-elect met with hearty approval. His splendid work as secretary-treasurer for the past eight years would in itself entitle him to the reward of the highest office in the gift of the Society; but his other qualities, such as his capacity for friendship, for clear thinking, and for leadership, all contribute to making his choice a happy one.

Dr. Westbrook Murphy takes over the presidency after a year's excellent training for the job. He also has the capacity for making friends, for logical reasoning, for decisive action, and for leadership. Our Society is in good hands for the next two years.

The selection of Dr. Millard Hill of Raleigh as secretary of the Society was a fortunate one. His experience as chairman of the Committee on Legislation will serve him in good stead as he undertakes his new job.

Other officers elected were Dr. Ben Royal, first vice president, and Dr. Joseph A. Elliott, second vice president.

This sketch of the Sesquicentennial meeting would not be complete without reference to the excellent impression that Mr. J. T. Barnes is making as executive secretary of the Society. Comments from physicians all over the state were uniformly complimentary to the way in which he is growing into his job. The motion to elect him for a three year term was passed unanimously and enthusiastically by the Executive Committee.

EDITORIAL NOTES

THE SESQUICENTENNIAL SESSION

The exhibits this year were brought back into the hotel, but not in the front entrance. On the side porches they had enough room, yet were not in the way of traffic. The exhibitors expressed themselves as pleased with the arrangement, and with the plan used for the attendance awards.

* * *

The Officers' Breakfast on Tuesday morning was devoted to a symposium on "The Job of the County and the District Medical Societies." Dr. Joseph S. Hiatt, of McCain, was moderator. Those taking part were Dr. Alban Papineau of Plymouth, Dr. Milton S. Clark of Goldsboro, and Dr. Allyn B. Choate of Charlotte. The papers will probably be published in the NORTH CAROLINA MEDICAL JOURNAL at a later date, and will bear reading by all county and district society officers.

* * *

One noticeable feature of this meeting was the number of younger men taking part in various ways—as county officers, as delegates, and as participants on the scientific programs and in the scientific exhibits. This is as it should be, for the future of medicine is in the hands of the younger generation. It is good to see the young men taking an interest in the progress of their profession.

* * *

Quite apparent was the changed attitude of the Carolina Hotel personnel, as compared with 1946. Last year—after the Society had gone to Virginia Beach in 1947—the reception given the members was much more cordial, and this year it was still warmer. A letter from the manager was read at the last General Session, expressing pleasure at having had the Society, and extending a most cordial invitation for it to return next year.

* * *

As the ex-presidents and other distinguished guests were introduced at the banquet Tuesday night, each was given a generous amount of applause. The real ovation, however, was given Mrs. Paul McCain—"Sadie," as she is known to her intimate friends. And not the least bit of envy was felt by any of the others.

* * *

The panel discussion on "The Medical Profession's Present-Day Health Problems," held in the Second General Session, attracted

much interest. One of the best addresses in this symposium was not listed on the program. This was by Miss Charlotte Rickman, field representative of the Committee on Rural Health and Education. While she was telling of her experience in organizing Rural Health Councils, one doctor was heard to whisper, "She would be the best public relations secretary we could get."

* * * *

RESOLUTION OF AMERICAN COUNCIL OF CHRISTIAN CHURCHES

To Rev. Carl McIntire, pastor of the Bible Presbyterian Church of Collingswood, New Jersey, this journal is indebted for a copy of a resolution unanimously adopted by the American Council of Christian Churches (of which Mr. McIntire is secretary) at its Spring Convention at Denver, Colorado, April 27-29, 1949. The resolution speaks for itself, and any comment would be superfluous.

Against Socialized Medicine

"For the State to usurp responsibility for the medical care of its citizens, whatever its name and title, constitutes an infringement of human responsibility and individual freedom which God has not given to the State.

"God created man for His own glory, gave him a body as a fit organ for his soul, and made man responsible to Him, not to the State, in his care of his body. The State has no right to destroy this relationship, and require by law, force, or other method the submission of the body to its paternal care.

"The soul and the body are inseparably connected, parted only by death; and when the State *attempts* such care of the body, it inevitably moves to direct the mind and spirit.

"The depravity of man, as taught in the Bible, so aggravates State control as it relates to government officials, politicians, physicians, and patients as to produce a corrupt, inefficient, expensive, bureaucratic and intolerable system.

"Socialized medicine in any form, represents, we believe, a clear violation of the Fourth Amendment of our Constitution which guarantees 'The right of the people to be secure in their persons.'

"The battle against State medicine is not for the doctors alone, but it belongs to all Christian people who cherish their own freedom as well as the physician."

DR. DAVID T. SMITH—PRESIDENT-ELECT OF N.T.A.

Not one of Dr. David Smith's legion of friends was surprised when the National Tuberculosis Association, at its annual meeting held in Detroit, May 2-6, chose him as president-elect. Dr. Smith's ability as a teacher, as a clinician, and as a research worker has won for him a national reputation. His selection was a recognition, not only of his professional ability, but also of his capacity for making friends.

Dr. Smith is the third North Carolinian who has been elected to this high office. His predecessors were the late Dr. Charles L. Minor of Asheville, and Dr. Paul McCain. Dr. Smith is a worthy successor to them.

* * * *

AUTOTRANSFUSION

Because of its importance to the hospitals of North Carolina, special attention is called to the article on "Autotransfusion" by Dr. A. G. Brenizer, Jr., which appears in this issue. In a letter which accompanied the manuscript of this article, Dr. Paul W. Sanger stated that "the universal use of autotransfusion is accepted as a life saving measure.

"The apparatus described in this article is so made that it is simple enough to assemble in any operating room. Due to the simplicity in fabricating it and due to the ease in using same, every hospital, regardless of size or type, should have this arrangement available. The hospital that does provide it will save a life!"

In surgery, especially in thyroid surgery, Dr. Brenizer's father was a pioneer. It is gratifying to note that the son has inherited so much of his father's pioneer spirit.

* * * *

CANCER TO BE REPORTABLE

A bill passed by the last legislature has made cancer a reportable disease, beginning July 1. The small amount of time required of each individual doctor for filling out the report cards will be well spent, since it should represent a real contribution to our vital statistics. In a letter from Drs. Norton, Lee, and Robertson, which appears on page 283 of this issue, assurance is given that these records will be confidential and handled "in accepted ethical fashion."

Since cooperation between public health officials and private practitioners is essential to true medical progress, the members of our profession should need no urging to give their wholehearted support to this undertaking.

Committees and Organizations

PUBLIC RELATIONS COMMITTEE*

Acting under instructions given by the House of Delegates at its call meeting in February, 1949, President Robertson instructed the Public Relations Committee to draw up a plan for an adequate public relations program for the Medical Society of the State of North Carolina. To be included were a full time public relations secretary, and plans for the financing of such a program.

At the second annual conference of the Public Relations Council of the Medical Society of the State of North Carolina, held in Raleigh on April 24, 1949, recommendations and proposals for such a plan were drawn up. The Public Relations Council consists of the presidents and secretaries of the county medical societies, the public relations committees of the county medical societies, the ten public relations councilors, and the State Society's Public Relations Committee. Fifty to sixty members of this Council were present at the above conference. The complete agreement of this entire group concerning the dire necessity for an adequate public relations program in the North Carolina Medical Society was striking. Recommendations and proposals for such a program were unanimously endorsed by this group, which requested the Executive Committee to present them to the House of Delegates at its annual session in Pinehurst in May. It is hoped that by the time this article is read, these recommendations and proposals will have been unanimously approved by the House of Delegates, as they were by the Public Relations Council which originated them.

With such a public relations program and with the financial means to support it, our State Society will be able, in the immediate future, to accomplish much toward educating the members of our own profession, as well as the public, on medical public relations problems. Such a program will also help us to combat and defeat all forms of compulsory health insurance and socialistic medical care.

Developments and revelations of the past few years have left no doubt in the mind of every doctor in the state that relations of the medical profession with the public are now at their very lowest ebb. Nor have they left any doubt that such relations must be improved, and improved *now*. As has been said so many times by so many people, the only adequate medical public relations agent is the individual doctor. However, this individual doctor needs to be educated in the principles of public relations, and taught how to stress the medical profession's good points and to correct as many of the bad points as possible.

The medical profession, for the first time in its history, finds itself in the position of asking favors—favors of the public in general, and favors of all of its organized branches, including labor, capital, and government. The profession desperately needs the help of the press, the radio, and all other means of communication to bring before the people again and again our accomplishments and services to the public. The people must be made to realize again their very real dependence on the American medical profession as an individual family need, and not as a commodity to be bartered and traded by the government.

DONALD B. KOONCE, M.D.
Wilmington

*Members of the Public Relations Committee of the Medical Society of the State of North Carolina are: Donald B. Koonce, M.D., Chairman, Wilmington; John S. Rhodes, M.D., Raleigh; Amos N. Johnson, M.D., Garland; and Charles F. Strosnider, M.D., Goldsboro.

CORRESPONDENCE

CANCER TO BE REPORTABLE

North Carolina State
Board of Health
Raleigh
April 28, 1949

To the editor:

After discussion with representatives of the State Medical Society, the State Cancer Committee and the North Carolina Division of the American Cancer Society, it was decided to request the 1949 Legislature to enact a law making cancer reportable.

This law provides that the name and address of every person who is found to have cancer of any type shall be sent, together with relevant items, by the physician consulted to the local health officer, within five days after the diagnosis. The forms used for reporting are to be prepared by the State Board of Health and supplied to the individual physician by the local health officer. The health officer is required to forward all report cards to the State Board of Health

within five days of their receipt from the physician.

The law having been enacted, we now have a new and valuable tool in our efforts to control cancer in North Carolina. Its usefulness, however, depends on the individual physician. Only as he is willing to give of his time to cooperate can reliable and significant data be accumulated. His cooperation will consist in filling in the report cards, and returning them promptly to the local health officer in envelopes provided for the purpose. The latter will forward them to the Board of Health for study and statistical analysis. The report cards are to be in the hands of the local health officers by the last week in June. The reporting applies to all cases of cancer and of suspected cancer, and is scheduled to be begun as of July 1, 1949.

The State Board of Health pledges itself to handle these confidential records in accepted ethical fashion.

We, the undersigned, urge all members of the profession to give whole-hearted support to this undertaking.

Yours very truly,
J. W. R. NORTON, M.D.
Secretary and State Heath Officer
DR. T. LESLIE LEE, Chairman
Cancer Committee
North Carolina State Medical Society
DR. JAMES F. ROBERTSON, President
North Carolina State Medical Society

* * *

RESOLUTION ADOPTED BY RADIOLOGICAL SOCIETY

Greensboro, N. C.
May 14, 1949

To the editor:

I would appreciate your publishing in the JOURNAL the following resolution, adopted by the North Carolina Radiological Society at its meeting in Pinehurst on May 10.

ELBERT D. APPLE, M.D., President

* * *

Whereas

1. The practice of radiology is the practice of medicine;
2. At least twenty-nine Blue Cross hospital policies do not include the practice of radiology;
3. The State Society is attempting to form a medical insurance plan for the lower income group;
4. It will simplify the acceptance of this medical insurance by the public if radiology is included in the medical policy rather than as at present in the hospital policy;

Therefore, be it resolved that the North Carolina Radiological Society go on record as being in favor of eliminating x-ray practice from the hospital policies and of favoring the inclusion of the practice of radiology in the medical and surgical policies.

Be it further resolved that our representatives to the Council of the North Carolina Medical Society be advised of this action.

Be it further resolved that individual copies of these resolutions be forwarded to all the Trustees of both Blue Cross companies in North Carolina.

Be it further resolved that copies of this resolution be forwarded to the Governor of North Carolina, the Insurance Commissioner of North Carolina, and the individual members of the North Carolina Legislature.

BULLETIN BOARD

NEWS NOTES FROM THE DUKE UNIVERSITY SCHOOL OF MEDICINE

Glen R. Gale, a premedical student at Duke University, reported the discovery of what is believed to be a new fungus killer at the annual meeting of the North Carolina Academy of Science on May 7.

The unnamed organism was tested against 28 different fungus organisms, and killed or stopped the growth of all of them. Among the fungi tested were those causing ringworm, athlete's foot, and two lung infections. The new fungus killer was equally effective against several organisms which cause such deadly plant diseases as apple scab, cotton root rot, apple blotch, canker of leaf spot, and foot rot in wheat. Dr. John R. Warren, instructor in botany at Duke, who advised and assisted Gale in his investigations, stated that if the substance can be extracted it may have practically unlimited possibilities in the treatment of plant diseases and certainly in treating superficial fungus skin diseases in humans.

* * * *

Dr. Hans Lowenbach, Duke University neuropsychiatrist, has been called to active duty by the U. S. Army Medical Corps, as a "neuropsychiatric consultant" in the European Theater. Dr. Lowenbach has been granted a leave of absence from Duke for this special service, beginning June 20. The probable area of his work will be Germany or Austria.

* * * *

Renewal of a grant by the National Tuberculosis Association to Dr. David T. Smith, professor of bacteriology, for studies of chemical agents which appear to inhibit the growth of the tuberculosis germ was announced recently. The grant is one of twenty-two approved by the NTA to aid specific tuberculosis research during the fiscal year beginning April 1.

News Notes from the Bowman Gray School of Medicine of Wake Forest College

A paper entitled "The Control of Electrolyte and Water Balance in Surgical Patients" by Dr. William A. Wolff, associate professor of clinical chemistry and toxicology, and Dr. Felda Hightower, assistant professor of surgery, won the Moore County Award presented annually at the meeting of the North Carolina Medical Society.

* * * *

Dr. R. L. Wall, head of the department of anesthesiology, was elected president of the newly formed North Carolina Society of Anesthesiologists at the organization meeting held in Pinehurst. The group, which is a component part of the American Society of Anesthesiologists, is made up of doctor anesthetists, who plan to meet twice yearly.

* * * *

Recent additions to the faculty are Dr. Frederick A. Blount, assistant in clinical pediatrics, and Dr. Angus Crawford Randolph, instructor in clinical psychiatry. Dr. Blount is a graduate of the University of Pennsylvania Medical School. Dr. Randolph, a graduate of the medical school of the University of Virginia, has just completed his appointment as resident at Graylyn.

* * * *

Dr. M. Rachmilewitz, head of the department of internal medicine at Hadassah Hospital and the University of Jerusalem, was a recent visitor to the Bowman Gray School of Medicine. He will help to establish a medical school at the University on his return to Jerusalem.

* * * *

The Carolina chapter of the American Physical Therapy Association met in Winston-Salem on April 23 and 24, with the Bowman Gray School of Medicine and the North Carolina Baptist Hospital as hosts. Members of the staff who presented papers at the meeting included Dr. Robert Lawson, associate professor of pediatrics, "New Developments in Treatment of the Acute Stage in Poliomyelitis"; Dr. Richard L. Masland, associate professor of neuropsychiatry, "Emotional Problems of Cerebral Palsy"; Dr. Angus C. Randolph, instructor in clinical psychiatry, "Psychiatry in Physical Therapy"; and Dr. Eben Alexander, instructor of surgery in charge of neurological surgery, "Paraplegias."

* * * *

Dr. W. A. Wolff, associate professor of clinical chemistry and toxicology, was chairman of the section on biochemistry and physiology at the forty-sixth annual meeting of the North Carolina Academy of Science at Chapel Hill, May 6 and 7. The program for that section included the following papers: "Lipide Phosphorylation in the Liver as Related to the Dietary Supply of Methyl Donors and Methyl Acceptors" by Dr. Camillo Artom, head of the department of biochemistry, and Dr. W. E. Cornatzer, assistant professor of biochemistry; "Lipide Phosphorylation in the Liver of Rats Fed Thiourea and Related Compounds" by Drs. Cornatzer and Artom; "Action of Some Inhibitors on the Glucose-6-Phosphatase of the Liver" by Dr. Marjorie Swanson, instructor in biochemistry; and "Toxicity of Radioactive Phosphorus in Mice on Various Diets" by Drs. Cornatzer and Artom, and Drs. David Cayer and George T. Harrell, Jr., of the department of medicine.

* * * *

Dr. Robert B. Lawson, associate professor of pediatrics, addressed the Minnesota State Medical Association at its ninety-sixth annual meeting in St. Paul, May 9-11. His subject was "Therapeutic Problems Encountered in Acute Poliomyelitis."

New Hanover County Medical Symposium

The New Hanover County Medical Society is planning its third annual medical symposium at Wrightsville Beach on August 19, 1949. An interesting program with nationally known speakers has been planned. An invitation is extended to anyone who wishes to attend.

Duke North Carolina Medical Postgraduate Course

A postgraduate course for North Carolina doctors will be held at the Duke Hospital, June 13-16. The schedule of classes, which will be held in the Duke Hospital Amphitheatre, is as follows:

Monday, June 13

9:45 a.m.—Address of Welcome
10 a.m.—Anatomy of the Gastrointestinal Tract
11 a.m.—Demonstration of Common Pathologic Lesions of the Gastrointestinal Tract
2 p.m.—X-Ray Demonstration of Common Gastrointestinal Lesions
3 p.m.—A Discussion of Liver Diseases
4 p.m.—A Discussion of the Diseases of the Pancreas
7 p.m.—Round Table Discussion on Metabolic Disturbances.

Tuesday, June 14

9 a.m.—Certain Diagnostic Procedures in Gastrointestinal Diseases
10 a.m.—The Ulcer Problem—Medical and Surgical Aspects
11 a.m.—Carcinoma of the Gastrointestinal Tract
2 p.m.—A Discussion of Diseases of the Colon
3 p.m.—The Acute Abdomen
4 p.m.—A Discussion of the Drugs Commonly Used in Gastrointestinal Diseases
7 p.m.—Round Table Discussion of the Gastrointestinal Diseases

Wednesday, June 15—Hypertension

9 a.m.—Statement of Problem Ophthalmologic Manifestations
10 a.m.—Dietary Therapy
2 p.m.—General Medical Therapy
3 p.m.—The Surgical and Urologic Aspects
4 p.m.—A Discussion of Hyperthyroidism
7 p.m.—Barbecue at Josh Turnage's

Thursday, June 16

9 a.m.—A Discussion of the Newer Antibiotics
10 a.m.—Epidemiology of Poliomyelitis. Diagnosis of Poliomyelitis
11 a.m.—Newer Therapy of Poliomyelitis
2 p.m.—Common Poisons in Children
3 p.m.—Clinicopathologic Conference

Participating faculty members are Drs. W. B. Anderson, J. M. Arena, E. P. Alvea, G. J. Baylin, F. C. Bone, W. D. Forbus, K. S. Grimson, Deryl Hart, J. P. Hendrix, Walter Kempner, E. C. Kunkle, J. E. Markee, D. S. Martin, Angus McBryde, W. M. Nicholson, D. T. Smith, E. A. Stead, Jr., and Donald White.

Registration will be held in Duke Hospital at the Dean's Office at 8 a.m. on Monday; the registration fee is $25.00. Rooms are available in the University dormitory at $1.50 per day. Synopses of lectures will be provided to each participant, and certificates of attendance will be issued. Inquiries should be addressed to Duke Hospital, Box 3701, Durham, N. C.

Southern Pediatric Seminar

The twenty-ninth annual session of the Southern Pediatric Seminar will be held at Saluda, North Carolina, July 18-30. Officers of the Seminar are Dr. Samuel F. Ravenel, dean; Dr. Mylnor W. Beach, vice dean; and Dr. D. Lesesne Smith, Jr., registrar. The faculty is made up of some of the outstanding pediatricians of the South, including Drs. Jay M. Arena, W. C. Davison, and Angus M. McBryde of Durham; Dr. Robert Lawson of Winston-Salem; Drs. Robert W. McKay and Oren Moore of Charlotte; Dr. S. F. Ravenel of Greensboro; Dr. Frank Howard Richardson of Black Mountain; and Dr. J. LaBruce Ward of Asheville. Among the eight special lecturers are Drs. W. M. Kelsey and Nash Herndon of Winston-Salem and Dr. J. W. R. Norton of Raleigh.

Accommodations and information concerning registration may be obtained from the secretary-treasurer, Mr. M. A. Owings of Saluda. The registration fee is $25.00.

North Carolina Obstetrical and Gynecological Society

The North Carolina Obstetrical and Gynecological Society met in Southern Pines, April 22-24. The scientific program was made up of papers by Dr. William Clary of Greensboro, Dr. Trogler Adkins of Durham, Dr. Glenn Edgerton of Charlotte, and Dr. Robert A. Kimbrough, Jr., of Philadelphia.

Officers of the Society for 1948-1949 were Dr. William S. Dosher, president; Dr. Kermit E. Brown, president-elect; and Dr. Richard B. Dunn, secretary-treasurer.

News Notes from the North Carolina Medical Care Commission

The General Assembly of 1949 enacted several bills of medical interest. Among them were:

1. **House Bill 601.** The second paragraph of subsection (c) of Section 131-120 was rewritten to clarify the authority of the Medical Care Commission. It is authorized to receive and administer any and all funds which may be provided by the General Assembly of North Carolina and/or by the Congress of the United States for the construction, operation and maintenance of hospitals, public health centers and related facilities.
2. **Senate Bill 198** authorizes and empowers the N. C. Medical Care Commission, at its discretion, to credit loans made to students of medicine, dentistry, pharmacy, and nursing for satisfactory service rendered in rural areas on a basis to be prescribed by the Commission.
3. **Senate Bill 337** expands the authority of the Medical Care Commission to license hospitals. The licensing Act of 1947 made licensing mandatory for hospitals that receive construction grants. Licensing was optional with other hospitals. The amendments by the 1949 Legislature make licensing of all hospitals in the state mandatory and a function of the Medical Care Commission, excepting privately-owned and operated mental hospitals which have been and will continue to be licensed by the State Department of Welfare. The amendments of 1949 also eliminated the hospital licensing fee of $10.
4. **Senate Bill 12** authorizes the Board of Trustees of the University of North Carolina to establish and operate a standard Dental School in conjunction with the Medical School at Chapel Hill.

State Board of Medical Examiners

The North Carolina State Board of Medical Examiners will meet at the Jefferson Hotel, Morehead City, on Saturday, July 23, at 10 a.m., at which time it will interview applicants for licensure by endorsement.

North Carolina Trudeau Society

A meeting of the North Carolina Trudeau Society was held in conjunction with the meeting of the North Carolina Tuberculosis Association in Winston-Salem on April 18 and 19. Following the scientific program, which consisted of papers by Dr. Kirby S. Howlett of Shelton, Connecticut, Dr. George T. Harrell of Winston-Salem, and Dr. E. E. Menefee, Jr., of Durham, a short business session was held. Officers elected for the following year were: president, Dr. J. S. Hiatt, Jr., McCain; vice president, Dr. W. E. Cook, Fayetteville; secretary-treasurer, Dr. Paul A. Yoder, Winston-Salem; assistant secretary, Dr. J. H. Capp, Winston-Salem.

The North Carolina Trudeau Society was organized in May, 1948, and during the past year over twenty new members have been added. This group is interested in chest disease in particular, and invites all physicians in the state who are interested in this phase of medicine to join and participate actively in the affairs of the organization.

Western North Carolina Medical Symposium

The Western North Carolina Medical Symposium, sponsored by the Tenth District Medical Society, was held in Asheville on April 29 and 30. Speakers included Drs. M. H. Greenhill, Bayard Carter, and E. P. Alyea of Durham; Dr. Edgar R. Pund of Augusta, Georgia; Dr. Ernest C. Faust of New Orleans; Dr. Henry W. Meyerding of Rochester, Minnesota; Dr. James F. Robertson of Wilmington; Dr. Roscoe D. McMillan of Red Springs; Dr. Samuel F. Ravenel of Greensboro; Dr. H. H. Bradshaw of Winston-Salem; Dr. Edward B. Tuohy of Washington, D. C.; Dr. Joseph A. Elliott of Charlotte; Dr. Fred J. Hodges of Ann Arbor, Michigan; Dr. C. H. McCaskey of Indianapolis, Indiana; Dr. E. D. Peasley of Asheville; and Dr. S. Bornstein, of Oteen.

Fourth District Medical Society

Dr. Fred Garvey of Winston-Salem spoke to the Fourth District Medical Society at its meeting in Weldon on April 26. His subject was "Early Diagnosis of Carcinoma of the Prostate."

Fifth District Medical Society

The annual spring meeting of the Fifth District Medical Society was held on April 21 in Fayetteville. After a short preliminary business session, a symposium on gastrointestinal diseases was presented by Drs. Graham Reid and Colin A. Munroe of Charlotte, and Drs. J. M. Ruffin and R. Wayne Rundles of Durham.

At the dinner meeting a few remarks were made by Dr. Roscoe D. McMillan and Mr. James T. Barnes, after which Dr. V. K. Hart of Charlotte discussed "The Present Day Status of Socialized Medicine and Hospital Insurance."

It is planned to hold the annual fall meeting at the North Carolina Sanatorium at McCain.

Edgecombe-Nash Counties Medical Society

The regular monthly meeting of the Edgecombe-Nash Counties Medical Society was held in Rocky Mount on April 13. The program consisted primarily of a discussion of the proposed health insurance program.

The Charlotte Fluorination Demonstration

On April 1, Charlotte joined fifteen other places in the United States where the domestic water supplies are being fluorinated for expected dental health benefits. The Charlotte Fluorination Demonstration is a fact-finding project under the direction of the Charlotte Health Department and paid for by special appropriation of the Charlotte City Council. This North Carolina demonstration is the pioneer effort in the Southeast, and the second largest in the United States.

The facts to be obtained from the Charlotte Fluorination Demonstration should provide important information because of its geographic location, because 30 per cent of its population is Negro, and because the water is exceptionally soft. Comparisons will be made with other communities in North Carolina, between Charlotte-born residents and migrants to Charlotte, between Charlotte and other communities fluorinating their water supplies, and between pre-fluorination findings and future determinations.

Dr. Frederick S. McKay of Colorado Springs, the pioneer research worker in the fluoride-dental relationship, was the principal speaker at the water plant ceremonies on April 1, when Mayor H. H. Baxter pulled the switch which started the gravimetric feeder to introduce the sodium fluoride powder. On April 7, after a series of complaints about the taste and the effect on goldfish and photographic solutions, it was revealed that introduction of the sodium fluoride had not yet taken place. Actual fluorination began on April 25.

American College of Chest Physicians

The Fifteenth Annual Meeting of the College will be held at the Ambassador Hotel, Atlantic City, June 2 through 5.

The first meeting of the Section on Diseases of the Chest in the Scientific Assembly of the American Medical Association will be held on June 8 and 9.

International Academy of Proctology

The first meeting of the newly formed International Academy of Proctology will be held at the Marlborough-Blenheim in Atlantic City on Friday, June 10, 1949. The scientific portion of the program will consist of the presentation of papers and motion picture films of interest to all physicians as well as to those specializing in proctology.

Further information and a copy of the program may be obtained by writing to Dr. Alfred J. Cantor, International Academy of Proctology, 43-55 Kissena Blvd., Flushing, N. Y.

American Society for the Study of Sterility

The fifth annual conference of the American Society for the Study of Sterility will be held at the Hotel Strand in Atlantic City, New Jersey, June 6 and 7. The registration fee is $10.00. Dr. Walter W. Williams, 20 Magnolia Terrace, Springfield, Massachusetts, is in charge of registration.

Conference of Presidents and Other Officers of State Medical Associations

Discussion of compulsory health plans for medical care and for disability compensation will high light the fifth annual meeting of the Conference of Presidents and Other Officers of State Medical Associations, to be held at Atlantic City on Sunday afternoon, June 5. The meeting will be held in the Rose Room of the Traymore Hotel, the day preceding the opening of the AMA general sessions, and it will be open to all physicians.

Cecil Palmer, English publisher, author, and journalist, will tell of the impact of socialized medicine on the British doctor and his patients. An American viewpoint of the British health system will be given by W. Alan Richardson, editor of **Medical Economics**, now in England for a first hand study of all phases of the program.

The AMA relationship to the state societies will be reviewed by Dr. George F. Lull, secretary of the AMA, and the problems facing the state association at the crossroads will be the subject of a talk by Dr. Clarence Northcutt, president of the Oklahoma State Medical Association. Plans are also pending for the presentation of views on national health legislation by a member of Congress.

Chicago Medical Society

The Chicago Medical Society is offering two postgraduate courses in October, 1949, each of one week duration, which will be open to all physicians who are members of their local medical societies.

A course in "Cardiorenal and Peripheral Vascular Diseases" will be given October 17 to 22, and a course in Obstetrics, Endocrine Gynecology, and Sterility will be offered the following week, October 24 to 29.

The courses will be given at Thorne Hall on Northwestern University Medical School campus. The faculty for each course will be made up of leading teachers from all sections of the United States and Canada. Each course is limited to one hundred.

Those interested in attending may secure additional information by writing Doctor Willard O. Thompson, Chairman, Committee on Postgraduate Medical Education, Chicago Medical Society, 30 North Michigan Avenue, Chicago 2, Illinois.

American Heart Association

Research awards totalling $250,000 have been allocated by the American Heart Association to 26 investigators and 6 medical schools and hospitals for studies in heart and circulatory disease. One grant-in-aid went to Dr. P. Scheinberg of the Duke University School of Medicine for studies on cerebral blood flow.

The National Foundation for Infantile Paralysis

The National Foundation for Infantile Paralysis announces that twenty-one physicians have been awarded postgraduate fellowships in the fields of scientific research, physical medicine, and public health.

Among the twelve fellowships in physical medicine was one awarded to Dr. Louis P. Britt, Jr., of Richfield, North Carolina, for training at Georgia Warm Springs Foundation and Emory University Hospital, Atlanta, Georgia.

(BULLETIN BOARD CONTINUED ON PAGE 292)

AUXILIARY

SANATORIUM BEDS

McCain Bed

Mrs. John H. Hamilton of Raleigh is chairman of the McCain Bed. This bed is named for Dr. Paul P. McCain, for many years superintendent of the State Sanatorium.

As a young physician, Dr. McCain came to the Sanatorium after having himself suffered from tuberculosis. Through years of service he became recognized throughout the state and in the remotest corners of the nation as an outstanding authority in his profession. The Medical Society of the State of North Carolina honored itself by electing him as its president. He was a medical statesman of the highest order. He made notable contributions, not only to the diagnosis and treatment of tuberculosis, but also to the broad fields of public health and preventive and curative medicine. All physicians in the state held him in high esteem. He was known and loved by countless thousands of citizens in all walks of life—the rich, the poor, the meek and humble, and those of high degree. His most ardent admirers were those who knew him best—his patients. One of these, Justice Wiley Rutledge of the United States Supreme Court, probably gave best expression of the feeling which they all held toward Dr. McCain:

"It was thirty-two years last July since I first came to this place and to Paul McCain's ministry. Then it was just well begun. I came fearfully, seriously stricken in body, downcast in mind and hope. Then in the early twenties, I learned that it is hard for the young especially, with all of life before them, to face slow death, worse perhaps to stand in dread of lingering illness and pain.

"I do not wish to make this tribute merely a personal history. But I cannot forbear to say two or three things out of an experience which can only have been one in common with thousands of others, indeed with all who became his patients during his long and devoted career.

"His ministry, for it was such, was threefold, of the mind, the heart, and the soul. In those days there were some three hundred patients. Each received his personal attention and on a personal basis. None was merely 'a case.' Even then highly skilled in his professional art, he inspired complete confidence. If there was help for the stricken body in the field of his specialization, he could give it. But his aid was never given coldly with mere efficiency. Scrupulously honest, he gave the patient the facts painstakingly and most often fully. This of itself inspired confidence.

"Beyond his skill and integrity, he knew that the patient's state of mind was quite as important to his recovery or well-being as his physical state. His effort was always to alleviate fears where this could be honestly done and, in any case, to bring composure. Without apparent effort, though it cost him much in time and energy, he created in each person a sense of understanding and courage. Where there was room for hope, he gave it."

* * * *

Stevens Bed

Mrs. G. M. Billings is chairman of the Stevens Bed. This bed is named for Dr. Martin Luther Stevens, who was born in Thornville, Ohio, on November 30, 1864. After a high school education there, he entered Baltimore Medical College in 1891. (This college later united with the University of Maryland.) He was resident physician in the Maryland General Hospital in 1891-92, and came to Enochville, North Carolina, in 1892, moving to Concord in 1899. He then came to Asheville for his health and was under the care of Dr. Karl von Ruck, who operated Winyah Sanatorium. Later, after recovering his health, Dr. Stevens was on the staff of Winyah Sanatorium until he entered private practice in Asheville, about 1903. He continued in this field until his death in 1940.

Dr. Stevens was a member of the Board of Medical Examiners of the State of North Carolina for six years, and was also president of the Medical Society of the State of North Carolina. He endeared himself to all of his colleagues by his high ethical principles, professional accomplishments, quiet, unobtrusive manner, and firm and lasting friendships. While a man of very definite convictions, he was so quiet in his demeanor that he seldom, if ever, raised his voice above its natural tone, even though he did not hesitate thus quietly to express very definitely his principles and opinions. His going left a void among the medical profession in Asheville that the lapse of almost a decade has failed to fill.

* * * *

A sketch of Dr. George M. Cooper, for whom the Auxiliary bed in the Eastern North Carolina Sanatorium was named, will appear in next month's issue.

* * * *

A. M. A. CONVENTION

The American Medical Association meets June 6-10 in Atlantic City, New Jersey. Haddon Hall will be headquarters. All Auxiliary members who are planning to attend are asked to notify Mrs. Raymond Thompson, 240 Cherokee Road, Charlotte, N. C., so that she may send them a registration card.

Summer Diarrhea in Babies

Casec (calcium caseinate), which is almost wholly a combination of protein and calcium, offers a quickly effective method of treating all types of diarrhea, both in bottle-fed and breast-fed infants. For the former, the carbohydrate is temporarily omitted from the 24-hour formula and replaced with 4 packed level tablespoonfuls of Casec. Within a day or two the diarrhea will usually be arrested, and carbohydrate in the form of Dextri-Maltose may safely be added to the formula and the Casec gradually eliminated. One to three packed level teaspoonfuls of a thin paste of Casec and water, given before each nursing, is well indicated for loose stools in breast-fed babies. For further information, write to Mead Johnson & Company, Evansville 21, Indiana.

New Biolac Being Detailed

A new and improved Biolac, liquid modified milk for infant feeding produced by the Prescription Products Division of The Borden Company, is being extensively detailed and promoted exclusively to the medical profession in line with their strictly ethical policy.

Addition of new ingredients gives the new Biolac greater stability and better keeping qualities. Adherence to modern concepts as well as current practices in infant feeding, plus improved production and manufacturing facilities, has resulted in a new, better-than-ever Biolac.

Classified Advertisements

DOCTOR WANTED

WANTED: A medical doctor and a druggist to locate in the town of Clarkton. Drugstore and office ready for occupancy.

A. G. McDougald, owner.

FOR SALE

In whole or part, a complete set of office furniture and equipment including fluoroscope, examining and treatment room fixtures only two years old. Leaving to specialize. If desired may take over unopposed practice in rural community of 6000.

Box 368
La Grange, N. C.

BOOK REVIEWS

Clinical Aspects and Treatment of Surgical Infections. By Frank Lamont Meleney, M.D., F.A.C.S., Associate Professor of Clinical Surgery, College of Physicians and Surgeons, Columbia University; Associate Visiting Surgeon, Presbyterian Hospital, New York City. With a Foreword by Allen O. Whipple, M.D. 840 pages with 287 figures. Price, $12.00. Philadelphia and London: W. B. Saunders Company, 1949.

Dr. Allen O. Whipple, in the foreword of this monograph, prophesies that "it will fill a unique position in surgical literature." One may add that it will have not only a unique, but an exceedingly important, place in surgical literature and teaching.

Essentially every aspect of all surgical infections is covered clearly, concisely, and authoritatively. Not only the usual surgical infections, but also infections of the genital and urinary tracts, bones and joints, and central nervous system are discussed. It would be difficult to select an outstanding chapter, as each one is in itself outstanding. Case histories, with abundant excellent illustrations, emphasize the important points in this text. Although only 840 pages in length, it is nearly encyclopedic in its wealth of information regarding surgical infections.

This volume should be of great interest, not only to surgeons, but to all physicians. Future editions, which will undoubtedly keep abreast of the rapid advances in the field of antibiotic and chemotherapeutic agents, will be awaited with considerable interest.

Current Therapy 1949 — Latest Approved Methods of Treatment for the Practicing Physician. By Howard F. Conn, M.D., Editor. Consulting Editors: M. Edward Davis, Vincent J. Derbes, Garfield G. Duncan, Hugh J. Jewett, William J. Kerr, Perrin H. Long, H. Houston Merritt, Paul A. O'Leary, Walter L. Palmer, Hobart A. Reimann, Cyrus C. Sturgis, Robert H. Williams. 672 pages. Price, $10.00. Philadelphia and London: W. B. Saunders Company, 1949.

This volume represents an interesting departure in textbooks on therapy. The authors have assumed that the diagnosis is established; hence all discussions of the clinical aspects of the disease, differential diagnosis, and laboratory diagnostic tests are omitted. Insofar as possible, an attempt has been made to outline the single best method of treatment for each condition. Where more than one method is accepted, separate articles written by different individuals are included. Unusual or obsolescent methods of treatment are omitted.

The book is arranged with two columns to a page. It is printed in large type and is quite readable. No illustrations or references are included. The use of incomplete sentences or phrases occasionally detracts from the style.

Unfortunately, the advances in chemotherapy of infectious diseases have been made so rapidly that some sections became out of date before the book could be published. The book might be improved by some limited discussion of the reasons behind the treatment recommended. It should, however, prove very helpful to practicing physicians.

Clinical Roentgenology of the Digestive Tract. By Maurice Feldman, M.D., Assistant Professor of Gastroenterology, University of Maryland; Associate in Gastroenterology, Mercy Hospital; Consulting Roentgenologist, Sinai Hospital. Ed. 3. Price, $8.00. 901 pages. Baltimore: The Williams and Wilkins Company, 1948.

This represents the third revision of an excellent text on gastrointestinal roentgenology. The incidence of gastrointestinal complaints, which account for approximately 25 per cent of all general hospital admissions, and the widespread use and value of roentgenographic study of the gastrointestinal tract attest to the need for such a book.

In twenty comprehensive but succinct chapters, the author discusses age and sex incidence, clinical signs and symptoms, associated conditions, and differential and roentgen diagnosis. The book is written with unusual clarity and is well documented statistically. The illustrations are numerous and excellent.

This book is highly recommended, not only to physicians interested in gastroenterology or roentgenology, but as an authoritative text for all practitioners.

The Uses of Penicillin and Streptomycin. By Chester Scott Keefer, M.D., Wade Professor of Medicine, Boston University School of Medicine, Boston, Massachusetts. 72 pages. Price, $2.00. Lawrence: University of Kansas Press, 1949.

This small volume comprises the three Porter lectures given at the University of Kansas. The first lecture deals with penicillin, and the second with streptomycin. Discussions of the types of preparations, the dosage, the mode of administration, time-dose relationships, and reactions are followed by a section on the results obtained with the drugs in various diseases. Exact dosage schedules are given. The third lecture is a most exciting account of the historical development of antibacterial agents derived from microbes.

As is so often unfortunately the case, the development of new agents and new forms of old agents, such as dihydrostreptomycin, renders parts of the book obsolescent almost before it can be published.

The Liver and Its Diseases. By H. P. Himsworth, M.D., F.R.C.P., Professor of Medicine in the University of London; Director of the Medical Unit, University College Hospital, London. Price, $5.00. 204 pages. Cambridge, Massachusetts: Harvard University Press, 1947.

This book represents the collected Lowell lectures on "The Liver and Its Diseases," delivered at Boston, Massachusetts, by Dr. H. P. Himsworth, professor of medicine in the University of London.

The recent developments in the medical management of many forms of liver disease, hitherto refractive to treatment, have stimulated a renewed interest in this subject. Clinical and laboratory research has been conducted simultaneously in several branches of medicine by physiologists, biochemists, and nutritionists, and the significant findings have been scattered throughout the literature, often in specialized journals. It is particularly valuable to have access to this information in a single volume.

The author discusses the production of liver injury in experimental animals, the types of liver injury, and the factors which produce it. He then attempts to correlate the experimental findings with liver cell injury and the syndromes of hepatic failure seen in human patients. The book is illustrated with photographs of gross material, as well as with numerous excellent photomicrographs of pathologic material. A comprehensive bibliography is included after each chapter.

This book makes a significant contribution to the study of this intriguing group of diseases, and provides an excellent reference background to the pathologic physiology involved. It is recommended to internists and physicians interested in nutrition generally and in liver disease particularly.

Practical Aspects of Thyroid Disease. By George Crile, Jr., M.D., F.A.C.S., Department of Surgery, Cleveland Clinic. 355 pages with 101 figures. Price, $6.00. Philadelphia and London: W. B. Saunders Company, 1949.

This small volume is presented from the point of view of the surgeon, although the role of the internist or pediatrician in diagnosis and in pre- and post-operative care is covered. Among the subjects discussed are endemic goiter, hyperthyroidism, and carcinoma; the physiology of the thyroid and the rationale of the use of iodine and the anti-thyroid drugs; the role of roentgen therapy in the treatment of hyperthyroidism and thyroiditis and the use of radioactive iodine in hyperthyroidism; and cretinism and juvenile hypothyroidism. It is odd that myxedema is omitted, and that hypothyroidism following operation or radiation is discussed so briefly. The technique of thyroidectomy is described in some detail, as are postoperative complications.

The clinical photographs, x-rays, drawings, and photomicrographs are excellently reproduced on glossy paper. A short, selected bibliography is included. The monograph is a good review for practicing physicians as well as for students.

Correlative Neuroanatomy. By Joseph J. McDonald, M.S., M.Sc.D., M.D.; Joseph G. Chusid, M.D.; and Jack Lange, M.S., M.D. Ed. 4. 156 pages. Price, $3.00. Palo Alto, California: University Medical Publishers, 1948.

Correlative Neuroanatomy appears to be a somewhat misleading title for this excellent outline on disturbances of the nervous system. The book is organized in succinct outline form, with here and there an explanatory paragraph as required. It is amply provided with tables and diagrams, which not only support the text but have independent value in that they neatly bring together large quantities of related details.

The central theme of the book is disturbances of the nervous system. In Section I, afflictions of the peripheral nervous system are presented upon a background of the anatomy and function of the peripheral nerves. The autonomic nervous system is included in this section. In Section II, the central nervous system is similarly treated. In both these sections the information necessary for the localization of disorders of the nervous system is provided. A third section deals with the types of disturbances encountered in the nervous system—congenital, vascular, infectious, traumatic, neoplastic, degenerative, and epileptic. Finally, there are brief outlines on the muscular dystrophies and atrophies, neurologic signs and syndromes, and the neurologic examination.

The book should be of most use to upper class medical students and to clinicians in providing a rapid orientation in a particular topic. References are given to standard textbooks throughout the manual, and it is very likely that these will have to be consulted in many instances. The table of contents and the index are quite adequate.

Twentieth Century Speech and Voice Correction. Edited by Emil Froeschels, M.D., 321 pages. New York: The Philosophical Library, Inc., 1948.

The editor of this symposium is president of the International Society for Logopedics and Phoniatrics, and president of the New York Society for Speech and Voice Therapy. Among the contributors are speech therapists, psychologists, physicians, and teachers of the deaf. Froeschels himself has written several key chapters, outlining the anatomy and physiology of speech, discussing the construction of a meatus-obturator for the use of patients with cleft palate, and presenting a technique for correcting stammering—namely, the "chewing" method.

There are several excellent chapters on education of the deaf and hard-of-hearing, with one particularly interesting account, by Mary Wood Whitehurst, of intensive hearing education at an Army Rehabilitation Center. Cleft palate is discussed by several authors, who deal with surgery, prosthesis, and speech re-education. Dysarthria, paragrammatism, alalia, and cluttering are discussed in separate chapters. William Peacher describes the analysis and treatment of disorders of articulation due to gunshot wounds of the head and neck in World War II. O. R. Bontrager, in his chapter on remedial reading and general semantics, points out that authorities on reading are inclined to ignore problems of structure and the relations between words and the nonverbal events. Charles R. Strother describes the training of laryngectomized patients in acquiring esophageal speech, which has great advantages over speech produced by the use of an artificial larynx.

Most chapters in the book include a good bibliography. It is a well-arranged presentation of some of the recent work in the field of speech and voice correction.

Medical X-Ray Protection Up to Two Million Volts

The increasing use of high-energy X-rays in medical diagnosis and treatment has presented new problems in all phases of radiation protection and shielding. Recommended standards of safety for the installation and use of high-voltage X-ray equipment are concisely set forth in a new handbook. **Medical X-Ray Protection Up to Two Million Volts,** published by the National Bureau of Standards, as Handbook 41. It is obtainable from the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C., for 15 cents.

Schering President Asks Industry Aid for Research

The need for closer cooperation between the pharmaceutical industry and universities having facilities for medical research was urged recently by Mr. Francis C. Brown, president of Schering Corporation of Bloomfield, N. J. Speaking before a meeting of the medical alumni of New York University College of Medicine at the faculty club in New York, Mr. Brown called for support of research by industry and individual donors, rather than the public treasury.

New Detergent Curbs Cross-Infection and Shortens Surgical Scrub Time

A two-minute preoperative scrub for surgeons and nurses is provided by a new antiseptic, soapless, sudsing agent known as pHisoderm-Hexachlorophene 3 per cent, which also gives added protection against cross-infection, it was announced recently by Winthrop-Stearns Inc., pharmaceutical manufacturers, of New York and Rensselaer.

THE TUCKER HOSPITAL

212 West Franklin Street, Corner Madison
Richmond, Virginia

A private hospital accepting for diagnosis and treatment organic neurological conditions, selected psychiatric and alcoholic cases, metabolic disturbances of an endocrine nature, individuals who are having difficulty with their personality adjustments, and children with behavior problems. Patients with general medical disorders admitted for treatment under our staff of visiting physicians.

Under the Professional Charge of

DR. BEVERLEY R. TUCKER, DR. HOWARD R. MASTERS
AND DR. JAMES ASA SHIELD

◆

Catalog on Application

BULLETIN BOARD

(CONTINUED FROM PAGE 287

The National Committee for Chile

The National Committee for Chile is now receiving gifts for the library of the Medical School of the University of Chile. The newer materials in the library, including periodicals, books and reference materials, were totally destroyed in the recent fire. Medical periodicals of the last ten years and recent medical books are urgently needed.

Contributions should be addressed to the National Committee for Chile, Room 318, Library of Congress, Washington, D. C.

Federal Security Agency

Grants of $293,452 by the National Cancer Institute to support laboratory and clinical research, and of $79,853 for research facilities, were announced recently. Two grants went to Duke University—one to Dr. Joseph W. Beard for studies on (1) purification and study of fowl leucosis virus and (2) investigation of the phenomenon of the inhibition of the influenza virus-red blood cell hemagglutinative reaction; and one to Dr. R. Wayne Rundles for research on the clinical, hematologic, and chemical effects of urethane (ethyl carbamate) in multiple myeloma.

* * * *

Dr. H. Trendley Dean, Dental Director USPHS and Director of the National Institute of Dental Research, has been selected by the Association of Military Surgeons of the United States to receive the Gorgas Award for 1949 "for outstanding contributions in the field of military medicine."

The award, sponsored since 1941 by Wyeth, Inc., pharmaceutical manufacturers of Philadelphia, will be presented to Dr. Dean at the annual banquet of the Association on November 11 at Hotel Statler, Washington, D. C.

Dr. Dean and his associates at the National Institute of Dental Research have been responsible for most of the basic research on the effect of fluoride in water on dental caries. Their findings may lead to the mass prevention of dental decay through fluorination of public water supplies.

National Military Establishment

Air Surgeon Initiates General Practice Branch

Air Surgeon Major General Malcolm C. Grow recently announced the initiation of a General Practice Branch in the Air Surgeon's office, to be charged with the development of training opportunities and careers for general practitioners serving at USAF installations.

According to current Air Force organization, approximately 70 per cent of physicians serving with USAF units are general practitioners. Of the remainder, 5 per cent are staff and administrative personnel and 25 per cent are specialists.

Initiation of the new General Practice Branch was considered imperative by General Grow, who characterized the general practitioner as "the backbone of the Air Force medical service."

Under the new program the general practitioner will be enabled to enter into a proposed residency program to be operated in the General Hospital setup. The residency program will offer the general practitioner access to latest technical developments in medical and surgical specialties. Special emphasis will be placed on internal medicine, surgical practices, pediatrics and obstetrics.

The new General Practice Branch will work cooperatively with the Surgeon General's career program for medical officers.

American Hearing Society

It is estimated that deafness affects two or three times as many persons as cancer, heart disease, tuberculosis, and infantile paralysis combined. Approximately 15,000,000 Americans have impaired hearing, and this figure includes 3,000,000 children. According to medical authorities, half of these children can be saved from becoming permanently hard of hearing if the causes are discovered and treatment given in time.

To focus public attention on the importance of better hearing, the 123 local chapters of the American Hearing Society throughout the country conducted educational campaigns in their communities during National Hearing Week, held May 8 to 14.

The American Hearing Society, whose headquarters are at 817 Fourteenth Street, N.W., in Washington, D.C., is a member of the National Health Council and the National Social Welfare Assembly. Its program is approved by the National Information Bureau and it is supported by voluntary contributions from the public.

National Society for Crippled Children and Adults

Although five million persons with speech disorders comprise the largest single group of handicapped persons in America today, scarcely more than 10 per cent of these speech defectives are receiving the attention and training they need, according to Miss Jayne Shover, speech consultant for the National Society for Crippled Children and Adults and Dr. Herbert Koepp-Baker, counselor on speech to the National Society.

There are at least a million stutterers in this country and recent surveys show that one out of every 100 children has a stuttering difficulty, they point out.

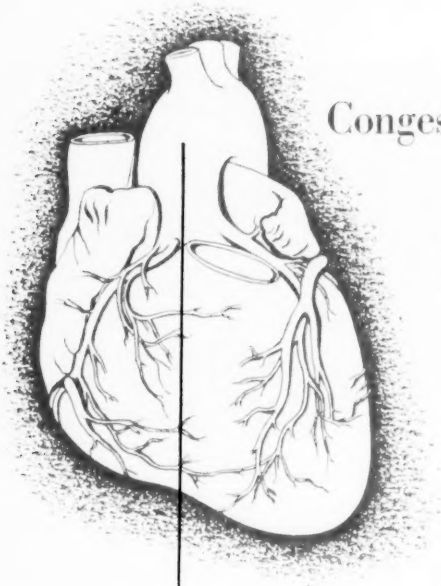
To aid in the dissemination of accurate information on speech problems, the National Society, in cooperation with the American Speech and Hearing Association, recently published a booklet on "Stuttering." Written by Dr. Charles Van Riper, an authority on speech correction, and edited by Dr. Wendell Johnson, the booklet may be obtained from the National Society, 11 S. LaSalle Street, Chicago 3, Illinois, for 35 cents.

National Vitamin Foundation

Dr. E. Gifford Upjohn, vice president of The Upjohn Company, Kalamazoo, Michigan, was elected president of The National Vitamin Foundation for 1949 at the annual meeting of Foundation members held in New York.

Dr. Upjohn succeeds Basil O'Connor, attorney and president of the American Red Cross, who was named to the newly created position of Honorary Chairman of the Board of Governors. J. Paul Folsom, Lederle Laboratories Division, American Cyanamid Company, New York, was elected board chairman, replacing A. H. Fisk, Eli Lilly & Co., Indianapolis, Indiana. H. B. Fonda, Burroughs Wellcome & Co. (USA) Inc., was elected vice president, succeeding Raymond E. Horn, Abbott Laboratories, North Chicago, Ill.

Fred J. Stock, vice president Chas. Pfizer & Co., Inc., Brooklyn, N. Y., elected chairman of the executive committee, succeeding L. D. Barney, Hoffman-La Roche, Inc., Nutley, N. J., announced that expanded plans for research and education on vitamins during 1949 would be considered at a joint meeting of the board of governors and executive committee in New York, May 18.



Congestive Heart Failure...

"The most striking effects were seen in cases of hypertensive heart failure. . . . There is a rapid fall in the raised right auricular pressure with a conspicuous increase in the output of the heart."[1]

SEARLE

AMINOPHYLLIN*

—improves cardiac failure by effecting an improved heart action with increased blood flow, and eliminating edema fluids by the renal route.

Searle Aminophyllin is indicated in paroxysmal dyspnea, bronchial asthma, Cheyne-Stokes respiration and selected cardiac cases.

ORAL—PARENTERAL—RECTAL DOSAGE FORMS

Searle Aminophyllin contains at least 80% of anhydrous theophylline. G. D. Searle & Co., Chicago 80, Illinois.

SEARLE RESEARCH IN THE SERVICE OF MEDICINE

1. Howarth, S.; McMichael, J., and Sharpey-Schafer, E. P.: The Circulatory Action of Theophylline Ethylene Diamine, Clin. Sc. 6:125 (July 17) 1947.

The Keeley Institute Greensboro, North Carolina

Offering a restful, homelike atmosphere for the professional treatment of alcoholism and restoration of patients to normal health conducted on the highest standards and with an outstanding record of experience for fifty-six years with more than 18,000 patients.

Large club rooms, comfortable bedrooms, excellent meals, beautiful grounds and recreational facilities in a city of 80,000 population. . . For illustrated brochure and further information, write:

THE KEELEY INSTITUTE P. O. BOX 29 GREENSBORO, NORTH CAROLINA

A. F. FORTUNE, M. D., MEDICAL DIRECTOR BEN F. FORTUNE, M. D., ASSOCIATED MEDICAL DIRECTOR

DRINK
Coca-Cola
TRADE MARK REG.

You trust
its quality

With this in hand

The Cardiologist~ is assured of

Dependability in Digitalis Administration

Being the powdered leaves made into
physiologically tested pills,
all that Digitalis can do, these pills will do.

Trial package and literature sent to physicians on request.

DAVIES, ROSE & COMPANY, Limited
Manufacturing Chemists, Boston 18, Massachusetts
D14

ILLNESS AND INJURY MAKE NO APPOINTMENTS WITH DOCTORS!!

Are you insured in your Society's Plan of Disability Insurance approved and made effective in 1940? Since that time, we have paid disabled members of the North Carolina Medical Society over $300,000.00 in benefits.

WRITE FOR ENROLLMENT BLANK TODAY.

J. L. CRUMPTON

Post Office Box 147 Durham, N. C.

—Representing—

COMMERCIAL CASUALTY INSURANCE COMPANY
NEWARK, NEW JERSEY

Cool Air . . .

CIRCULATED TO EVERY CORNER OF YOUR OFFICE

NOW!

NO HARMFUL DRAFTS

ANNOY YOUR PATIENTS

NO OTHER convenience offers doctors and patients alike, the relaxing, cooling comfort of a Welch Air-Flight Circulator.

Welch Air-Flight Circulators draw in cool air from the coolest part of the room and circulate it to every corner. It keeps patients cooler without the annoying drafts of old-fashioned fans; without the unhealthful dampness of unit coolers.

Welch AIR-FLIGHT *Circulators*

Lustrous, sturdy plastic top and translucent louver-rings provide smart, sanitary appearance—easy to keep clean. Light in weight. Easy to move.

POWERS & ANDERSON

Norfolk, Va. Winston-Salem, N. C.

EDGEWOOD...

A Distinctive Southern Sanitarium Fully Equipped for Complete Diagnosis and Treatment of Nervous and Mental Disorders . . . in an Atmosphere of Congenial Friendliness and Quiet Charm.

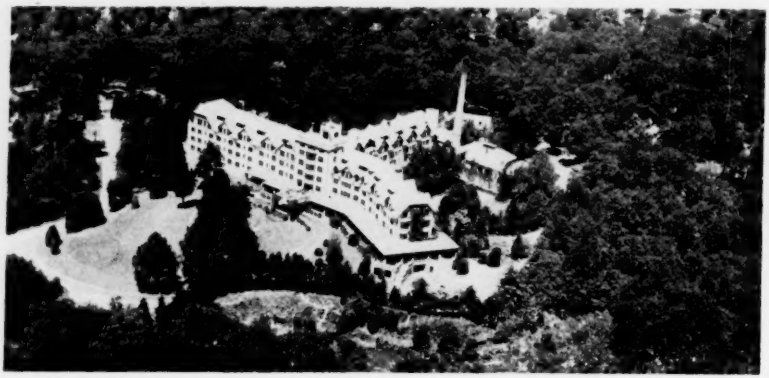
Edgewood offers all approved therapeutic aids; complete bath departments; supervised individual physical rehabilitation programs. Living accommodations are private and comfortable. Recreational facilities excellent. Full time psychiatrists, adequate nurses and psychiatric aides assure individual care and treatment. More detailed information on request.

Psychiatrist-In-Chief Orin R. Yost, M.D.

EDGEWOOD

ORANGEBURG SOUTH CAROLINA

APPALACHIAN HALL — Asheville, North Carolina



An institution for rest, convalescence, the diagnosis and treatment of nervous and mental disorders, alcohol and drug habituation.

Appalachian Hall is located in Asheville, North Carolina. Asheville justly claims an unexcelled all year round climate for health and comfort. All natural curative agents are used, such as physiotherapy, occupational therapy, shock therapy, outdoor sports, horseback riding, etc. Five beautiful golf courses are available to patients. Ample facilities for classification of patients. Rooms single or en suite with every comfort and convenience.

For rates and further information write
APPALACHIAN HALL, ASHEVILLE, N. C.

WM. RAY GRIFFIN, M.D. M. A. GRIFFIN, M.D.

STUART CIRCLE HOSPITAL

413-21 Stuart Circle — **RICHMOND, VIRGINIA**

Medicine:
Alexander G. Brown, Jr., M.D.
Manfred Call, III., M.D.
M. Morris Pinckney, M.D.
Alexander G. Brown, III., M.D.
John D. Call, M.D.

Obstetrics and Gynecology:
Wm. Durwood Suggs, M.D.
Spotswood Robins, M.D.

Orthopedics:
Beverley B. Clary, M.D.

Pediatrics:
Charles P. Mangum, M.D.
Algie S. Hurt, M.D.

Ophthalmology, Otolaryngology:
W. L. Mason, M.D.

Pathology:
Regena Beck, M.D.

Surgery:
Stuart N. Michaux, M.D.
A. Stephens Graham, M.D.
Charles R. Robins, Jr., M.D.
Carrington Williams, M.D.
Richard A. Michaux, M.D.

Urological Surgery:
Frank Pole, M.D.

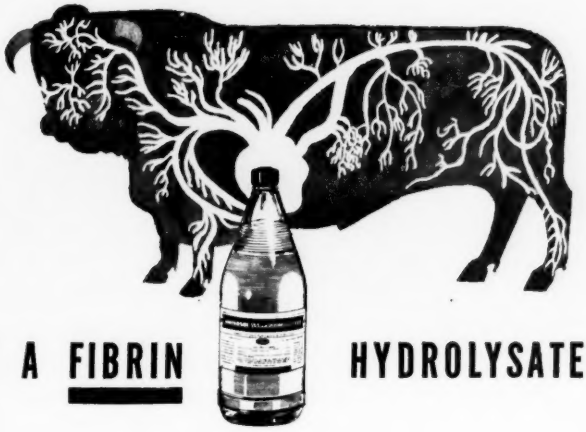
Oral Surgery:
Guy R. Harrison, D.D.S.

Roentgenology and Radiology:
Fred M. Hodges, M.D.
L. O. Snead, M.D.
Hunter B. Frischkorn, Jr., M.D.
Randal A. Boyer, M.D.

Physiotherapy:
Irma Livesay

Bacteriology:
Forrest Spindle

Director:
Charles C. Hough



WHY A FIBRIN HYDROLYSATE ?

AMINOSOL 5% with Dextrose 5% was developed as a protein hydrolysate after much research work on different source materials. Numerous nutrition experiments pointed to the unique role of fibrinogen as a normal constituent of the body. A recent clinical investigation[1] indicates that peptides in a protein hydrolysate derived from fibrin as a source material are retained better and are excreted to a considerably smaller extent than are the peptides derived from other protein source materials.

Fibrin was selected as the source for AMINOSOL because of its completeness as a food protein. The result is a hydrolysate which, after stringent animal and human use, has been shown to have high biological value and stability. AMINOSOL is assayed for the absence of anaphylactic properties by a very rigid procedure. Freedom from pyrogens is assured. The practical absence of sodium ion recommends it for use in cardiac and renal conditions where a salt-free diet is indicated.

AMINOSOL is supplied in 500-cc. and 1000-cc. Abbott Intravenous Solution Containers, ready to use. Obtain added safety and convenience in administration by using the sterile, disposable VENOPAK* equipment.

ABBOTT LABORATORIES, NORTH CHICAGO, ILLINOIS.

**Trade Mark for Abbott's completely disposable venoclysis unit.*

AMINOSOL® 5% WITH DEXTROSE 5%

(Abbott's Modified Fibrin Hydrolysate 5% with Dextrose 5%)

1 Christensen, H. N., Lynch, E. L. Decker, D. G., and Powers, J. H. (1947), The Conjugated, Non-Protein, Amino Acids of Plasma. IV A Difference in the Utilization of the Peptides of Hydrolysates of Fibrin and Casein, J. Clin. Invest., 26:849, September

LIFETIME ACCIDENT INDEMNITY
TWO YEARS SICKNESS INDEMNITY
For Physicians And Surgeons

Fifteen Years of Satisfactory Service to the Medical Profession

HERE IS A POLICY WITH NO TECHNICALITIES

Incontestable after one year, as to origin of disability.
No age limit, if policy is purchased before age 60.
No house confinement required.
Non-cancellable for period during which premium is paid.

Loss of Time: Pays $200.00 per month for Total Disability due to ACCIDENT	**LIFE**
Loss of Time: Pays $200.00 per month for Total Disability due to SICKNESS up to	**$4800.00**
Hospital or Graduate Nurse at home, $100.00 per month, additionally, up to	**200.00**
Surgeons Fees: If your injuries require a doctor, but cause no loss of time, bills are paid, up to	**50.00**

INDEMNITIES MAY BE PURCHASED AS ABOVE OR FOR SMALLER AMOUNTS

RALPH GOLDEN
REPRESENTING
INTER-OCEAN INSURANCE COMPANY
222 PIEDMONT BLDG. GREENSBORO, N. C.
F. W. SARLES, STATE MANAGER

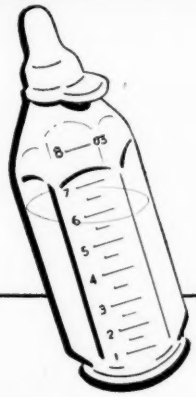
BROADOAKS SANATORIUM
MORGANTON, NORTH CAROLINA

James W. Vernon, M.D. E. H. E. Taylor, M.D. J. T. Vernon, M.D.

A PRIVATE HOSPITAL FOR THE TREATMENT OF NERVOUS AND MENTAL DISEASES, INEBRIETY AND DRUG HABITS

A home for permanent care of selected cases of chronic nervous and mental diseases. Equipped for treatment by approved methods. Billiards, tennis and other diverting amusements. Located in Piedmont North Carolina, the climate is mild and invigorating at all seasons.

The three medical officers of the staff reside at the sanatorium and devote their full time to the care and service of the patients.



20 CALORIES *per ounce*

...OR 30...OR 40

Big meals for small stomachs

"It is, at times, necessary to give food of a considerably higher caloric value than would be anticipated. Giving of a food of a caloric value too low to meet the infant's needs is by all odds the chief cause of failure in infant feeding."*

When feedings of higher than normal caloric value are indicated, how simple it is with Similac! You merely increase the amount of Similac powder to be added to each ounce of water. The relation of all the nutritive elements to each other *remains the same* as in normal breast milk. And the Digestive Factor *does not change;* for Similac has a consistently *zero curd tension* like breast milk – even in mixtures of double the normal caloric value.

**Page 51, Infant Nutrition: Jeans and Mariott, 1947.*

One measure (included in each can) of Similac added to two ounces of water makes two ounces of the normal formula—20 calories per ounce.

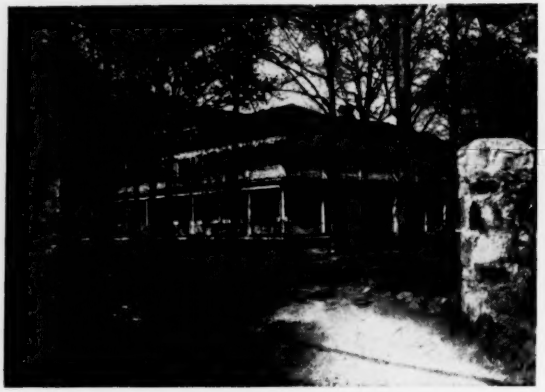
SIMILAC

Similar to breast milk

SIMILAC DIVISION • M & R DIETETIC LABS, INC. • COLUMBUS 16, OHIO

GLENWOOD PARK SANITARIUM

Founded by
W. C. ASHWORTH, M. D.
1904



GREENSBORO,
North
Carolina

Established in 1904 and continuously operated since that date for the medicinal treatment of drug and alcoholic addictions. Located in an attractive suburb of Greensboro where privacy and pleasant surroundings are to be found.

C. R. RINER, M.D., *Medical Director*

Address: GLENWOOD PARK SANITARIUM, Greensboro, N. C.

Telephone: 2-0614

For Shy, Nervous, Retarded Children

Year round private home and school for girls and boys of any age on pleasant 150 acre farm near Charlottesville.

Individual training and care, expert teachers. Limited enrollment, amusements, special diets, medical care if necessary. Entrance made at any time. Write for Booklet.

Mrs. J. Bascom Thompson, Principal

THE THOMPSON HOMESTEAD SCHOOL

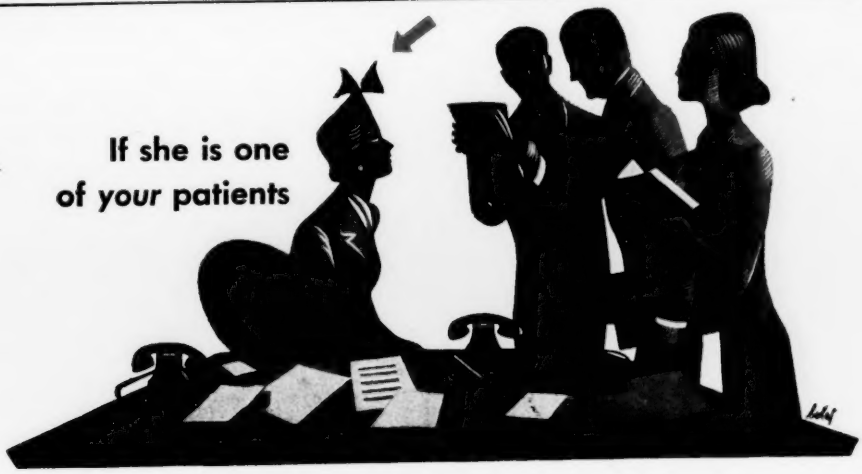
Free Union, Virginia

BROOK HAVEN MANOR

Here the mentally and emotionally sick patient will find
all the traditional charm of a Southern Manor House ....
a bright and friendly world of smart decor,
pleasing diversion and memorable cuisine ....
blended with individualized methods of treatment.

Newdigate M. Owensby, M.D.
Psychiatrist-in-Chief

BROOK HAVEN MANOR SANITARIUM
STONE MOUNTAIN, GA.



..Your help now may spell the difference between unprovided-for old age and economic security.

Women in business who are nervous, emotionally unstable and generally distressed by symptoms of the climacteric almost inevitably experience a reduction in efficiency as well as earning power.

"Premarin" offers a solution. Many thousand physicians prescribe this naturally-occurring, oral estrogen because...

1. Prompt symptomatic improvement usually follows therapy.
2. Untoward side-effects are seldom noted.
3. The sense of well-being so frequently reported tends to quickly restore the patient's confidence and normal efficiency.
4. This "Plus" (the sense of well-being enjoyed by the patient) is conducive to a highly satisfactory patient-doctor relationship.
5. Four potencies provide flexibility of dosage: 2.5 mg., 1.25 mg., 0.625 mg. and 0.3 mg. tablets; also in liquid form, 0.625 mg. in each 4 cc. (1 teaspoonful).

Ayerst

While sodium estrone sulfate is the principal estrogen in **"Premarin,"** other equine estrogens...estradiol, equilin, equilenin, hippulin...are probably also present in varying amounts as water-soluble conjugates.

"PREMARIN"®

ACCEPTED COUNCIL ON PHARMACY AND CHEMISTRY AMERICAN MEDICAL ASSOCIATION

ESTROGENIC SUBSTANCES (WATER-SOLUBLE)
also known as CONJUGATED ESTROGENS (equine)

Ayerst, McKenna & Harrison Limited 22 East 40th Street, New York 16, New York

BRAWNER'S SANITARIUM

Established 1910
SMYRNA, GEORGIA
(Suburb of Atlanta)

FOR THE TREATMENT OF
Nervous and Mental Disorders, Drug and Alcohol Addictions

JAS. N. BRAWNER, M.D.
Medical Director

ALBERT F. BRAWNER, M.D.
Dept. for Men

JAS. N. BRAWNER, JR., M.D.
Dept. for Women

Compliments of

Wachtel's, Inc.

SURGICAL SUPPLIES

65 Haywood Street
ASHEVILLE, North Carolina
P. O. Box 1716 Telephones: 1004-1005

For GOOD EATING and GOOD HEALTH

Get the Best—
Get Sealtest!

Sealtest
ICE CREAM

NATIONAL DAIRY PRODUCTS CORP. Sealtest

Dilaudid hydrochloride

(dihydromorphinone hydrochloride)

COUNCIL ACCEPTED

Powerful opiate analgesic - dose, 1/32 grain to 1/20 grain.

Potent cough sedative - dose, 1/128 grain to 1/64 grain.

Readily soluble, quick acting.

Side effects, such as nausea and constipation, seem less likely to occur.

An opiate, has addictive properties.

Dependable for relief of pain and cough, not administered for hypnosis.

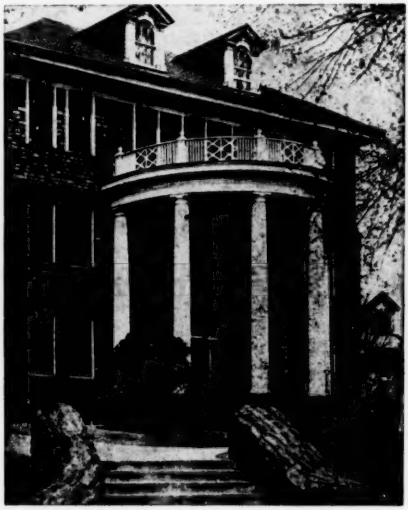
● Dilaudid is subject to Federal narcotic regulations. Dilaudid, Trade Mark Bilhuber.

Bilhuber-Knoll Corp. Orange, N. J.

HIGHLAND HOSPITAL, Inc.

FOUNDED IN 1904

ASHEVILLE NORTH CAROLINA



AFFILIATED WITH DUKE UNIVERSITY

A non-profit psychiatric institution, offering modern diagnostic and treatment procedures—insulin, electroshock, psychotherapy, occupational and recreational therapy—for nervous and mental disorders.

The Hospital is located in a sixty-acre park, amid the scenic beauties of the Smoky Mountain Range of Western North Carolina, affording exceptional opportunity for physical and nervous rehabilitation.

The OUT-PATIENT CLINIC offers diagnostic services and therapeutic treatment for selected cases desiring non-resident care.

R. Charman Carroll, M.D., Diplomate in Psychiatry
Medical Director

Robt. L. Craig, M.D., Diplomate in Neurology and Psychiatry
Associate Director

Carolina Rest Home

SYMPATHETIC
UNDERSTANDING
TREATMENT

For Male or Female Patients with Alcoholic Problems

Completely New Modern Fireproof Structure

U. S. Highway No. 1 South
P. O. Box 174 Phone 2-1721
WEST COLUMBIA, S. C.

PIERRE F. LaBORDE, M. D.
Medical Director

MARGA D. LIVINGSTON, R. N.
Director of Nurses

Cook County Graduate School of Medicine

ANNOUNCES CONTINUOUS COURSES

SURGERY—Intensive Course in Surgical Technique, two weeks, starting June 20, July 25, August 22.
Surgical Technique, Surgical Anatomy and Clinical Surgery, four weeks, starting June 6, July 11, August 8.
Surgical Anatomy and Clinical Surgery, two weeks, starting May 16, June 20, July 25.
Surgery of Colon and Rectum, one week, starting June 13, September 12.
Esophageal Surgery, one week, starting June 13.
Thoracic Surgery, one week, starting June 20.
Breast & Thyroid Surgery, one week, starting June 27.
Fractures and Traumatic Surgery, two weeks, starting June 13, October 3.
GYNECOLOGY—Intensive Course, two weeks, starting June 20, September 26.
Vaginal Approach to Pelvic Surgery, one week, starting May 16, June 13, September 19.
OBSTETRICS—Intensive Course, two weeks, starting May 16, September 12.
MEDICINE—Intensive General Course, two weeks, starting June 13, October 3.
Electrocardiography and Heart Disease, two weeks, starting July 18.
Gastroenterology, two weeks, starting June 27.
Personal Course in Gastroscopy, two weeks, starting May 16, June 13.
PEDIATRICS—Diagnosis and Treatment of Congenital Malformations of Heart, two weeks, starting June 13.
Personal Course in Cerebral Palsy, two weeks, starting August 1.
DERMATOLOGY—Formal Course, two weeks, starting June 13.
Informal Clinical Course every two weeks.
CYSTOSCOPY—Ten Day Practical Course every two weeks.
UROLOGY—Intensive Course, 2 weeks, starting Sept. 26.

GENERAL, INTENSIVE AND SPECIAL COURSES IN ALL BRANCHES OF MEDICINE, SURGERY AND THE SPECIALTIES

TEACHING FACULTY—ATTENDING STAFF OF COOK COUNTY HOSPITAL

Address: Registrar,
427 South Honore Street, Chicago 12, Illinois

ACCIDENT - HOSPITAL - SICKNESS

INSURANCE

FOR PHYSICIANS, SURGEONS, DENTISTS EXCLUSIVELY

ALL PREMIUMS COME FROM — PHYSICIANS SURGEONS DENTISTS — ALL CLAIMS GO TO

$5,000.00 accidental death $25.00 *weekly indemnity, accident and sickness*	**$8.00** *Quarterly*
$10,000.00 accidental death $50.00 *weekly indemnity, accident and sickness*	**$16.00** *Quarterly*
$15,000.00 accidental death $75.00 *weekly indemnity, accident and sickness*	**$24.00** *Quarterly*
$20,000.00 accidental death $100.00 *weekly indemnity, accident and sickness*	**$32.00** *Quarterly*

ALSO HOSPITAL EXPENSE FOR MEMBERS, WIVES AND CHILDREN

85¢ out of each $1.00 gross income used for members' benefit

$3,700,000.00 INVESTED ASSETS — **$15,700,000.00** PAID FOR CLAIMS

$200,000.00 deposited with State of Nebraska for protection of our members.

Disability need not be incurred in line of duty—benefits from the beginning day of disability

PHYSICIANS CASUALTY ASSOCIATION
PHYSICIANS HEALTH ASSOCIATION

47 years under the same management
400 FIRST NATIONAL BANK BUILDING, OMAHA, 2, NEB.

Specific Hyposensitization in Pollinosis

PRESEASONAL TREATMENT

75 to 85% successful

in securing comfort and relief

Order your choice of Arlington's Pollen Diagnostic and Treatment Sets now . . . and have ample time to complete your treatment schedules.

Arlington

THE ARLINGTON CHEMICAL COMPANY
YONKERS 1, NEW YORK

DIAGNOSTIC AND TREATMENT SETS

State Pollen Diagnostic Sets ($7.50)
Dry pollen allergens selected according to state; 1 vial house-dust allergen. Material for 30 tests in each vial.

Stock Treatment Sets ($7.50)
Each consisting of a series of dilutions of pollen extracts for hyposensitization, with accompanying dosage schedule. Single pollens or a choice of 21 different mixtures. Five 3-cc. vials in each set—1:10,000, 1:5,000, 1:1,000, 1:500, and 1:100 concentrations.

Special Mixture Treatment Sets ($10.00)
Mixtures of pollen extracts specially prepared according to the patient's individual sensitivities. Ten days' processing time required.

Arlington offers a full line of potent, carefully prepared, and properly preserved allergenic extracts for diagnosis and treatment—pollens, foods, epidermals, fungi, and incidentals.

Literature to physicians on request.

SAINT ALBANS SANATORIUM

RADFORD, VIRGINIA

A private institution for the diagnosis and treatment of nervous and mental disease, alcoholism and those requiring general up-building.

J. P. King, M.D. J. K. Morrow, M.D. D. D. Chiles, M.D. T. E. Painter, M.D.

FOR PATIENTS WITH

ALCOHOLIC PROBLEMS

. . . The Farm

A non-institutional arrangement in Howard County, Maryland, for the individual psychological rehabilitation of a limited number of selected voluntary patients with ALCOHOL problems—both male and female—under the psychiatric direction of Robert V. Seliger, M.D.

City office:
2030 Park Ave. Baltimore, Md.

SUCTION SOCKETS

Artificial legs without hampering straps have been the shining hope of amputees. Recently, the development of the Suction Socket Leg for above knee amputees seemed to realize this hope.

We understood what this type of limb could mean to the amputee. But we knew that these limbs were not perfected. Thus, in 1947, we joined with the Committee on Artificial Limbs and the VA in a program of research on the Suction Socket Limb. Under this program veteran cases have been awarded by the VA to companies having certified suction socket fitters. To date we have fitted well over 100 suction socket cases, of which 90% have been satisfactory.

Results of research show only about 20% of cases suitable for suction sockets. Results also show that close cooperation with doctors is necessary. Hanger is continuing research toward the amputee's great hope, and will keep the medical profession informed of its progress.

HANGER ARTIFICIAL LIMBS

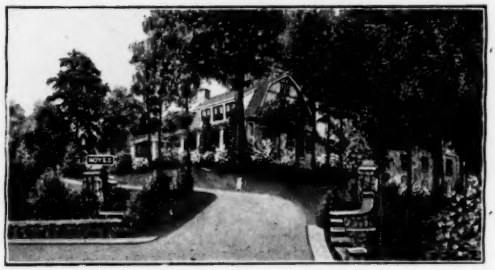
526 Hillsboro St. Raleigh, N. C.
735 N. Graham St. Charlotte, N. C.

Westbrook Sanatorium

ESTABLISHED 1911
RICHMOND, VIRGINIA

For the Treatment of NERVOUS and MENTAL DISORDERS and Addictions to ALCOHOL and DRUGS

STAFF: Jas. K. Hall, Dept. for Men Paul V. Anderson, Dept. for Women
ASSOCIATES: Ernest H. Alderman, M.D., Rex Blankinship, M.D., John R. Saunders, M.D., Thos. F. Coates, Jr., M.D.



"IN THE MOUNTAINS OF MERIDIAN"

HOYE'S SANITARIUM

Meridian, Mississippi

DIAGNOSIS AND TREATMENT OF NERVOUS AND MENTAL DISEASES AND ALCOHOLICS
Shock Therapy, (Insulin, Metrazol, Electro Shock). Other approved treatments. Violent patients or Morphine addicts not accepted. A good place to spend a Vacation.

Write P. O. Box 106
Telephone 524
DR. M. J. L. HOYE,
Superintendent
Fellow of the American Psychiatric Association

▼ Buy U. S. Government Bonds ▼

WITCHWOOD
Virginia Beach, Va.

For those who wish exclusive surroundings with nursing care. Open year 'round at 35th Street and Pacific Avenue. Telephone Virginia Beach 791.
References exchanged
MRS. SUSAN ZOLLICOFFER WHITE,
Owner and Manager

INDEX TO ADVERTISERS

Abbott Laboratories XXV
American Meat Institute X
Appalachian Hall XXIV
Arlington Chemical Company XXXIII
Ayerst, McKenna & Harrison XXIX
Bilhuber-Knoll Corp. XXXI
Borden Company XVII
Brawner's Sanitarium XXX
Broadoaks Sanatorium XXVI
Broad Street Sanitarium III
Brook Haven Manor XXVIII
S. H. Camp and Company XIV
Carolina Rest Home XXXII
Coca-Cola Company XX
Cook County Graduate School of Medicine XXXII
J. L. Crumpton XXII
Davies, Rose & Company, Ltd. XXI
The Edgewood Sanitarium XXIII
The Farm XXXIV
C. B. Fleet & Company, Inc. XV
Glenwood Park Sanitarium XXVIII
J. E. Hanger XXXIV
Highland Hospital XXXI
Holland-Rantos XVI
Hoye's Sanitarium XXXV
Inter-Ocean Casualty Company XXVI
Keeley Institute XX
Lederle Laboratories ..... 2nd Cover
Eli Lilly and Company ..... Insert-Front Cover
Luziers, Inc. VI
M & R Dietetic Laboratories, Inc. XXVII
Mead Johnson & Company ..... 4th Cover
Merck & Company IV
Parke, Davis and Company ..... XXXVI-3rd Cover
Philip Morris & Company XII
Physicians Casualty Association
Physicians Health Association XXXII
Pinebluff Sanitarium I
Powers and Anderson XXII
R. J. Reynolds Tobacco Company V
Saint Albans Sanatorium XXXIII
Schering Corp. IX
G. D. Searle & Company XIX
Smith, Kline & French Laboratories VII
Southern Dairies XXX
Stuart Circle Hospital XXIV
Thompson Homestead School XXVIII
Tucker Hospital 291
Wachtel's, Inc. XXX
Westbrook Sanatorium XXXIV
White Cross Hospital XVIII
Winchester Surgical Supply Company
Winchester-Ritch Surgical Company I
Winthrop-Stearns, Inc. XI
Witchwood Sanatorium XXXV
Wyeth, Inc. XIII

Contact

of a sensitized body cell

Relief

with BENADRYL

PARKE, DAVIS & COMPANY

Contact of a sensitized body cell with an allergen and subsequent release of histamine is considered to be the mechanism of allergic disorders.

Blocking the action of histamine, BENADRYL prevents reaction in cells that have been sensitized. Relief of symptoms is gratifyingly rapid, usually occurring within an hour or two after the first dose. And treatment with BENADRYL is simple, convenient, and inexpensive.

BENADRYL®

BENADRYL has been found highly effective in a wide variety of allergic states, ranging from seasonal, such as hay fever, to the non-seasonal, such as acute and chronic urticaria, angioneurotic edema, vasomotor rhinitis, contact dermatitis, erythema multiforme, pruritic dermatoses, dermographism, serum sickness, food allergy, and sensitization to drugs, such as penicillin and the sulfonamides.

BENADRYL hydrochloride (diphenhydramine hydrochloride, Parke-Davis) is available in a variety of forms to facilitate individualized dosage and flexibility of administration, including Kapseals®, Capsules and a palatable Elixir.

The usual dosage of **BENADRYL** is 25 to 50 mg. repeated as required. Children up to 12 years of age may be given 1 to 2 teaspoonsful of Elixir Benadryl.

DETROIT 32, MICHIGAN

Remember in 1932 we brought out Pablum?*

Embodying a new concept of cereal nutrition, easy of preparation, nonwasteful, forerunner of present day widely practised principles of food fortification—remember?

Later, in response to requests from physicians, we went a step further in Pabena,* similar in nutritional and convenient features to its father-product, Pablum, different in flavor because of its oatmeal base. If our pioneer work and ethical policy meet with your approbation, remember, please, to specify Pablum and Pabena.

*"Pablum" and "Pabena" are the registered trademarks of Mead Johnson & Company for these vitamin-and-mineral-enriched mixed cereal foods.

Mead Johnson & Company, Evansville, Indiana, U.S.A.